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U. S. DEPARTMENT OF AGRICULTURE

REPORT OF:

The Secretary of Agriculture

1956

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Department of Agriculture,
Washington, D. C.

THE PRESIDENT,
The White House, Washington, D. C.

DEAR MR. PRESIDENT: In your special farm message to the Congress January 9, 1956, you said: "In America, agriculture is more than an industry; it is a way of life. Throughout our history, the family farm has given strength and vitality to our entire social order. We must keep it healthy and prosperous." This report is a brief account of how the Department of Agriculture endeavored in fiscal year 1956 to help our people on the land keep the family farm "healthy and prosperous."

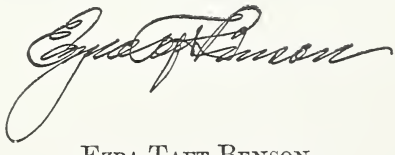
The family farm is changing—getting larger—but it is still the American family farm, strong and free. Agricultural assets are at their all-time peak. Farmland values per acre are record high. More farmers, proportionately, own their farms than ever before. Seven out of 10 own them clear; they have no mortgage debt whatsoever. I could produce many other statistics to prove that the family farm is in a strong position today.

And our family farms are moving toward greater freedom. We have a new and sound approach to farm problems. Instead of government's seeking to take over—to dictate—to dominate—we have the partnership approach. We are working *with* agriculture. Our aim is to serve.

Throughout this report you will see many specific examples of service by our agencies, by our scientists, our technicians, our administrators; service made possible not only by their own efforts but by the concerted endeavor of all USDA employees, clerical and secretarial, as well as professional. These employees are the muscle and the bone, and the brain of the Department of Agriculture. I pay tribute to them, one and all.

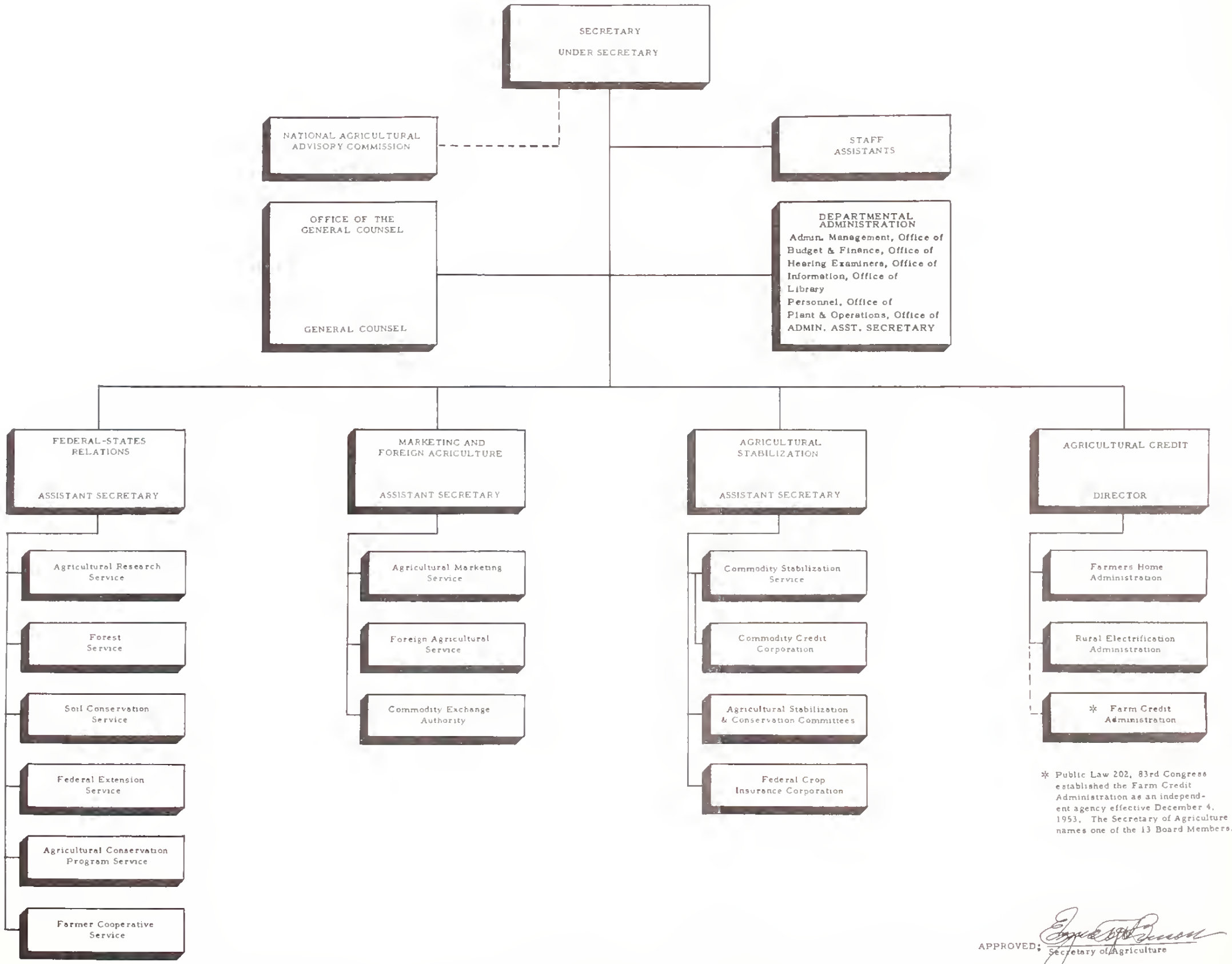
I transmit herewith the annual report of the Department of Agriculture for 1956.

Respectfully yours,



EZRA TAFT BENSON,
Secretary of Agriculture.

UNITED STATES DEPARTMENT OF AGRICULTURE



* Public Law 202, 83rd Congress established the Farm Credit Administration as an independent agency effective December 4, 1953. The Secretary of Agriculture names one of the 13 Board Members.

APPROVED: Ezra Taft Benson
Secretary of Agriculture

DATE September 26, 1956

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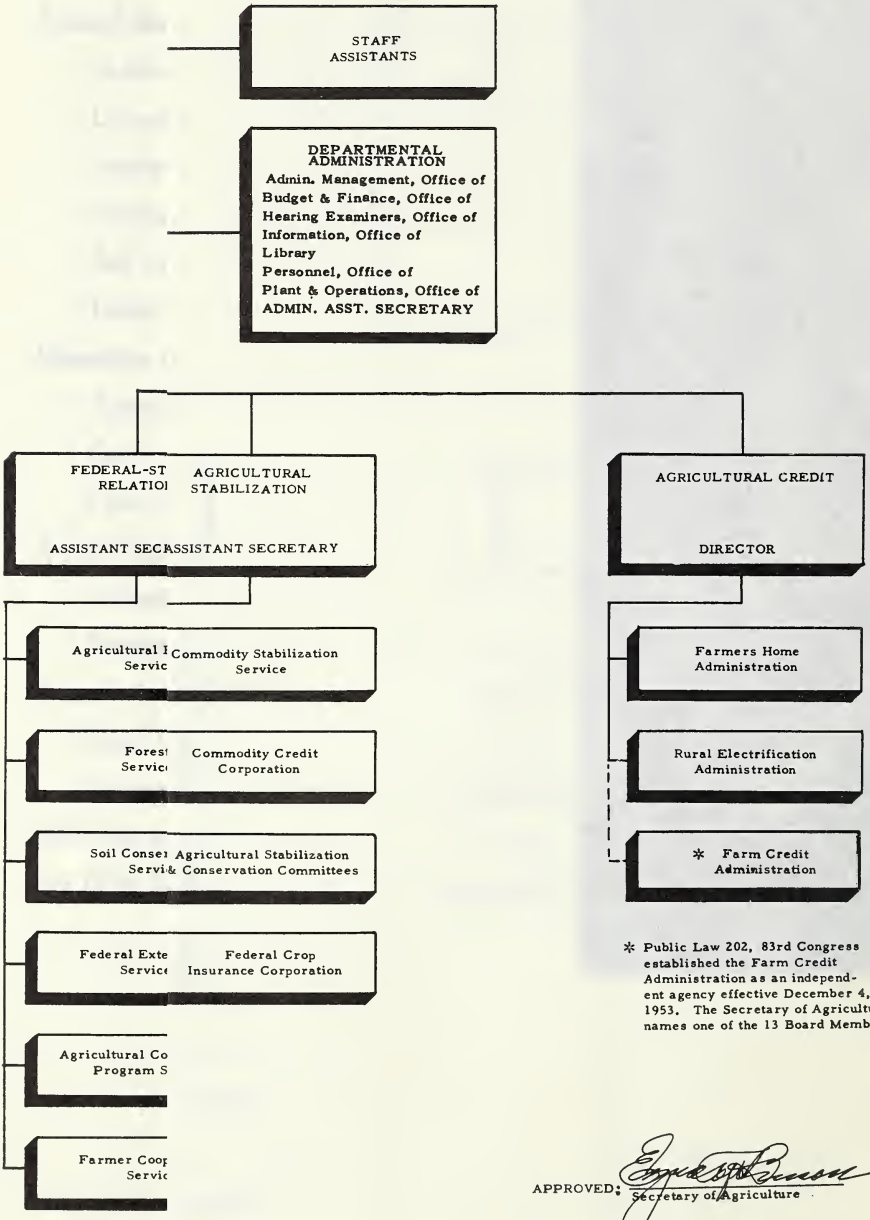
OF AGRICULTURE



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REPORT OF

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TURNING THE CORNER

Agriculture seems to have turned the corner. This was the big news in farming in 1956 and it sums up the outlook for 1957.

Agriculture is now in a position to start its upward climb toward a more adequate share in the Nation's record prosperity.

Surpluses are declining and the storage problem has passed its peak.

Total and per capita consumptions of food are increasing.

Consumers' income is at an alltime high and we expect it to set another new record in 1957. This means strong demand for food and fiber.

The quantity of our farm exports in fiscal 1956 was at the highest level in 30 years.

In the surplus disposal program, flexible price supports, and the Soil Bank, we have most of the basic tools we need to help agriculture in its present emergency.

And, most tangible evidence of all, the year 1956 saw an upturn in the net income realized by farm operators—the first such increase since 1951. Actually, there have been only two such increases since 1947. One was in 1951—at the height of the Korean war. The other was in 1956—a year of peace. We anticipate that 1957 will show another gain.

Agriculture has a sound basis on which to build. Farmers have faith in the future.

What brought about the improvement in the agricultural situation? Big demand, of course. Prosperity. Record consumer income. But much is due to the aggressive efforts by farm groups themselves to market their products. And we have aided them by a broad and enlightened program of governmental assistance.

Not only in 1956, but in the past 4 years the U. S. Department of Agriculture has swiftly and effectively met many complex farm problems. Well-timed purchase programs, special merchandising promotion, and other constructive action in commodity markets first slowed the fall, then brought relative stability to farm prices after a sharp 5-year decline.

When drought struck in widespread areas of the country in each of the past 4 years, the Department immediately made low-priced feed and liberal credit available to farmers. This drought problem demands the attention of the State governments as well as the Federal Government as we move ahead to improve the situation.

We have helped producers and warehousemen undertake the greatest expansion of onfarm storage facilities and commercial-type storage capacity in history. We have cooperated closely with other agencies that function in the international field, made full use of existing and new foreign trade legislation, and carried on positive negotiations with foreign governments and commercial interests.

Meantime, the "regular" functions of the Department have been strengthened. A sound reorganization of Department agencies has made it possible to meet the real needs of agriculture more effectively than ever before. Increased emphasis has been placed on fundamental research and education programs.

The principle of "flexibility" has at last been applied in price programs as contemplated by Congress in the Agricultural Acts of 1948, 1949, and 1954. Flexible price supports for the basic commodities, which became partially effective with the 1955 harvests and more fully operative in 1956, are designed to work toward better balanced production and consumption. These supports, ranging between 75 and 90 percent of parity are the highest ever written into peacetime agricultural legislation.

A Soil Bank to reduce surpluses, improve income, and strengthen conservation has been put into operation.

Of course agriculture is not out of the woods. As the year ended, farmers faced a beef problem in the drought areas, though outside these dry areas the beef situation is generally stabilized. Poultry and eggs are one of the darker spots in the picture. Poultry and turkey meat and eggs are all setting new production records. The Department has bought turkey meat and eggs to help stabilize prices. A heartening note is that per capita consumption of poultry meat is at a record level.

There are record supplies of wheat, cotton, and corn. These surpluses have hurt farmers, and are hurting them still. We are tackling this problem especially through the Soil Bank and our surplus disposal operations.

We are moving ahead. We are on the march toward a prosperous, expanding, and free agriculture in a prosperous, expanding, and free America. Things are looking up for agriculture, our basic industry. Its welfare is directly connected with the well-being of all our people.

We have heard much talk about agricultural subsidies. There is another kind of subsidy—a hidden subsidy—that few people say much about or think much about. This is a subsidy of farm people to the Nation.

More than half of our young farm men and women leave the farm before they are 25 years old. What does that mean? It means that farm families and farm communities rear, feed, clothe, shelter, and educate these young people throughout their unproductive years. Then, after they get out of college, they head for the city. Today more than twice

as many farm-reared adults are living off the farms as on the farms of the United States.

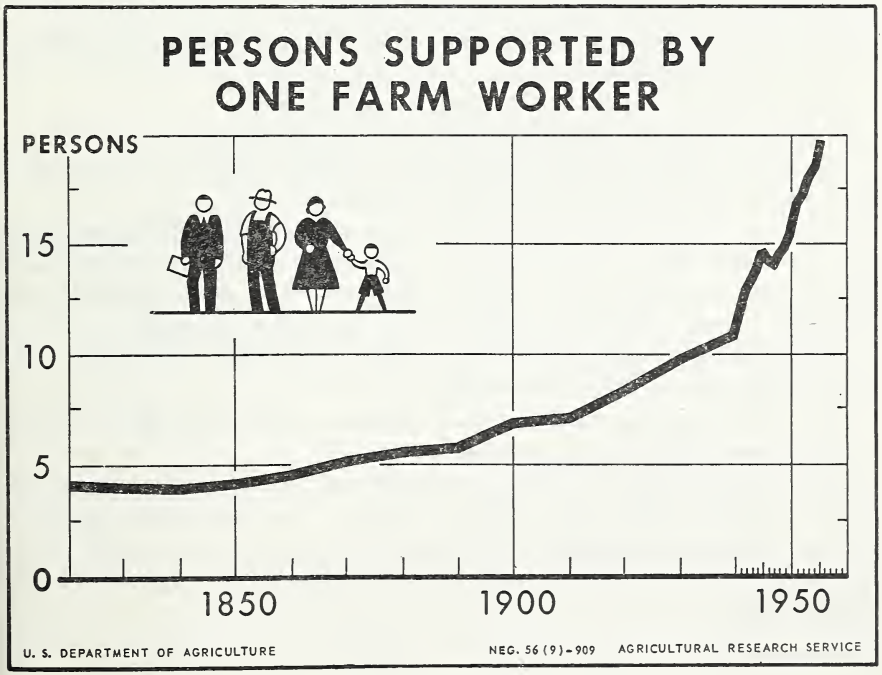
Historically this has been one of the biggest, most valuable, and least publicized of all subsidies.

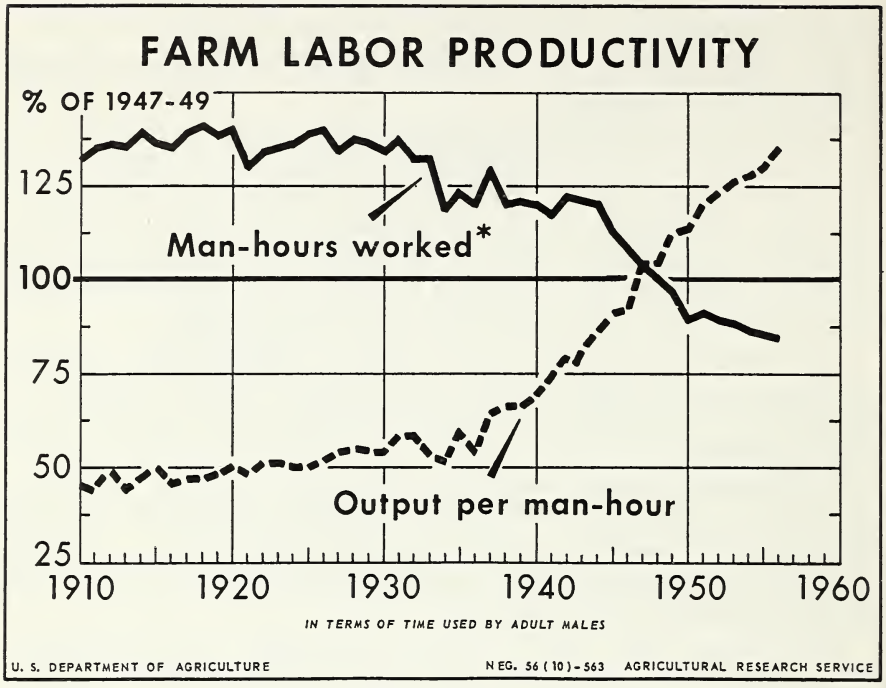
We have the most efficient agriculture in the world—and this, too, is a subsidy of sorts. Early in the history of America, 9 working persons out of 10 were in farming. Today only 1 working person out of 10 is in farming. A century ago 1 person in farming provided food and fiber for himself and 3 others. Today 1 farmworker provides for himself and 20 others. Without this prodigious increase in farming efficiency, our great cities and industries would never have been developed.

Our cropland base today is about the same as it was in 1920. For every 10 farmers we had then, we have only 6 now. Yet our people—even though there are 60 million more—have been eating in recent years better than ever before.

A generation ago, the American people spent 25 percent of their income after taxes for food. Today we still spend one-fourth of our income after taxes for food—but a far better diet. If we were content with the diets of a generation ago, it would take less than 20 percent of our present income, after taxes, to buy it.

Food is a good buy—the best buy on the market. We take pride in saying this. We take pride in the great contribution of American farmers to the American economy.





Thirty years ago an hour's take-home pay for industrial workers would buy 5½ loaves of bread—now it buys 10 loaves.

Thirty years ago an hour's take-home pay would buy 3½ quarts of milk—now it buys 7½.

Then it bought 1½ pounds of steak—2 pounds now.

Then it bought 1½ pounds of chicken—3 pounds now.

An hour's take-home pay today buys 3 dozen oranges or 11½ cans of tomatoes—about 3 times as much as 30 years ago.

And here is what has happened to diets as a result. We consume per person today about twice as much ice cream and tomatoes as we did 30 years ago—more than three times as many oranges—about one-half more chicken—about a third more beef—about one-sixth more eggs.

We drink more milk and eat more cheese, vegetables, and fruits. Our bread and grain products are enriched.

Our diets contain more calcium, protein, iron, vitamins A and C, thiamine and niacin and riboflavin.

Even though there are still people in this country with inadequate diets—there has been major progress toward more healthful living.

Our children are bigger, our people live longer, and malnutrition is no longer the scourge of 1 family out of 3 as it was in days within our own memory.

This is what an efficient agriculture has meant to our Nation and our people.

This is why the U. S. Department of Agriculture is honored to serve American farm families and, through them, to serve all the people of our land.

FEDERAL-STATES RELATIONS

AGRICULTURAL RESEARCH SERVICE

Because of agricultural research:

A wheat farmer in Minnesota can now plant a new variety of durum wheat that is resistant to the deadly stem rust, race 15B, which for several years has wiped out his crop.

A dairy farmer in Wisconsin has a herd free of brucellosis, and the stepped-up brucellosis eradication campaign has greatly decreased the threat that this costly disease might be introduced into his herd.

A Nebraska farmer is changing over to a new high-producing and disease-resistant hybrid sorghum that promises to do the same job in increasing efficiency of sorghum production that hybrids have already done for corngrowers.

A Florida citrus grower observes with satisfaction the State-Federal program to eradicate an invasion of the Mediterranean fruitfly, which otherwise would seriously threaten his livelihood.

A Texas truck farmer is proudly growing the first hybrid spinach. It is resistant to the most damaging diseases, quickly makes a heavy crop, and is tailored for machine harvesting.

A hog raiser in Illinois, who got rid of vesicular exanthema when he began cooking the garbage fed to his hogs a few years ago, now gets dividends on this practice by fewer cases of cholera, erysipelas, trichinosis, and tuberculosis in hogs.

These are a few of the people scattered over the United States who benefited from agricultural research in fiscal 1956. Millions of others reaped advantages also: Consumers who bought safe and wholesome federally inspected meat; farmers and ranchers who were protected against buying 706,129 doses of worthless and contaminated brucellosis vaccine; thousands of farmers and feeders who, but for the vigilance of ARS, might have bought hog cholera vaccine contaminated with the germs of swine erysipelas.

The Agricultural Research Service has a twofold responsibility: (1) To conduct research aimed at finding better methods of farming, improving the farm home, breeding better types of plants and animals, and gathering new knowledge that will enable farmers to produce and market more efficiently. (2) To put the results of research to work in regulatory programs that protect farms from invasion by foreign pests and diseases, to eradicate dangerous pests and diseases that do invade us, and to reduce the damage from those it is impossible or impractical to eradicate.

Crops To Fit the Farmer's Needs

Much ARS research is devoted to efforts to find new lines and crosses of row-crop and forage plants that are good field producers and that have built-in resistance to an increasing number of plant diseases and insect pests. During fiscal 1956

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ARS released the following plants for seed increase:

Boone and *Plymouth*, disease-resistant potato varieties developed jointly by ARS and the North Carolina Agricultural Experiment Station. They are suited, respectively, to highland western and tidewater eastern areas of North Carolina.

Coronado sideoats grama grass, selected for high seed yield, large seed, good seedling vigor, and uniform stand. Developed cooperatively by ARS and the Oklahoma Agricultural Experiment Station, it is adapted to western Oklahoma, the Texas Panhandle, and adjacent areas.

C. P. 48–103, a disease-resistant sugarcane, with the highest sugar content early in the season of any variety ever made available for commercial culture in Louisiana. ARS and the Louisiana Agricultural Experiment Station cooperated in producing it.

Dual, a high-producing soft winter wheat, resistant to the Hessian fly. It was developed cooperatively by ARS and the Indiana Agricultural Experiment Station.

Early Hybrid 7, the first hybrid spinach, resistant to blue mold and blight. ARS and the Texas station developed it.

Goldtop, a new variety of yellow biennial sweetclover. It matures 2 weeks later than other varieties, has excellent seedling and second-year vigor, provides longer second-year grazing than any other yellow variety, and is slightly more resistant to blackstem disease than other varieties. Wisconsin Agricultural Experiment Station and ARS developed it.

Grant, an early-maturing high-yielding soybean variety with a high oil content, especially adapted to central Minnesota and southeastern South Dakota. Grant was developed by ARS in cooperation with agricultural experiment stations in the North Central Region.

Hybrid sorghums of several new lines not yet named. Hybrid sorghums are expected to replace rapidly the varieties of sorghum now being grown on about 15 million acres.

Lahontan, a new variety of alfalfa suited for growth in the Southwest. It was developed cooperatively by ARS and agricultural experiment stations of California and Nevada.

Langdon and *Yuma*, varieties of durum wheat. They were developed by ARS in cooperation with the North Dakota station to replace varieties susceptible to race 15B stem rust of wheat. These new varieties are a signal victory by plant breeders over stem rust 15B, which in recent years has practically wiped out the durum wheat crop.

Tifgreen, a new variety of lawn grass, developed by ARS in cooperation with the Georgia Agricultural Experiment Station.

Traill, a new variety of spring barley, developed cooperatively by ARS and the North Dakota station. It yields 10 percent more grain per acre than another extensively grown variety.

Y. R. Charleston Wakefield and *Badger Ballhead*, new varieties of disease-resistant cabbage, both quite resistant to the yellows. The two varieties were cooperatively developed and released by ARS and the Wisconsin station.

ARS continues its efforts to find antibiotics that control fungus infections of plants as they control bacterial diseases. Bacterial leaf spot of sesame has been successfully controlled with streptomycin; F–17, an antibiotic mixture developed by utilization research, controlled bean rust in preliminary tests. Oligomycin, developed at the University of Wisconsin, prevents rust and an-

thracnose in lima beans. Five antibiotics have been effective in protecting snap beans and lima beans from 1 or more of 4 fungus diseases on which they were tested. None of these antibiotics is yet available for use by growers.

Farmers in cotton-growing areas of Arkansas, Louisiana, and Mississippi have been concerned because boll weevils have acquired resistance to DDT and other chlorinated hydrocarbon insecticides. ARS is investigating a promising new phosphorus insecticide. Research is underway to determine whether the new material can be used without leaving excessive residues in cottonseed products for human and animal consumption.

Tailormade Livestock

Animals can also be redesigned for higher and more efficient production and fewer losses. Breeding is the principal tool in tailoring better livestock, but better nutrition and control of diseases may also produce highly desirable improvements.

Lamb studies at Beltsville, Md., show that through crossbreeding Hampshire, Shropshire, and Southdown sheep, production of lambs and wool can be materially increased. In an 8-year period, 6.4 percent more two-way-cross lambs were raised to weaning age (140 days) than purebred lambs of the three breeds. In a 5-year period, 7.9 percent more three-way-cross lambs lived to weaning age than purebred lambs. Producing lambs with greater viability increases the size of the flock. Annual production of live lambs at weaning time, in terms of weight, showed an increase of 17.8 pounds per ewe among the crossbreds as compared with the purebreds. Fleeces of three-way-cross yearling ewes averaged 1 pound heavier per fleece than among the purebreds. The experimental work is not complete, but results so far indicate the feasibility of producing crossbred lambs on a commercial scale.

A bigger calf crop, produced more frequently, should result from a series of researches now being carried on by ARS in cooperation with a number of States. Work at Beltsville, Md., shows that cows on a high protein diet produce calves up to 40 pounds heavier at weaning; and the cows return to the reproductive function as many as 90 days earlier than those on a low protein diet.

As the expanded brucellosis eradication program continues, high calf losses from abortion caused by brucellosis are on the wane. Attention is now being turned to such other causes of abortion as trichomoniasis and vibriosis. No successful treatment of trichomoniasis has yet been found. A practical measure, however, is to avoid using infected bulls. Even cows previously infected with vibriosis suffer no recurrence when they are bred to vibriosis-free bulls. Research continues on both diseases.

ARS and the Wisconsin Agricultural Experiment Station are investigating a mysterious condition that is reducing the dairy calf crop. Thirty percent of a large number of cows failed to conceive from artificial breeding when there was no evidence of any disease that causes abortion. Examination revealed that the cows had actually conceived, but that the embryo had failed to implant in the womb. It soon died, and in 1 or 2 months the cow came back in heat. The cause for this condition has not been determined.

Pursuit of all these researches should help eliminate difficulties that now delay reproduction. A larger and more vigorous calf crop, produced more rapidly, would then result.

Fans Add Pounds to Beef

Playing fans on beef cattle in hot weather can cause spectacular weight gains. In the Imperial Valley of California animals in a corral equipped with a fan to stir the air at the rate of 3.7 miles per hour gained nearly 80 percent more than animals that sweltered without fanning.

At the Missouri Agricultural Experiment Station, Shorthorn calves raised in a chamber kept at 50° F. gained nearly 200 pounds more weight by the time they were yearlings than those kept in chambers at 80° F.

Protecting Livestock From Disease

One of the duties of ARS is keeping foreign disease out of the country.

During fiscal 1956, animal inspection and quarantine officials continued their vigilance over animals submitted for entry. One animal rejected was a horse with glanders, a disease that has been absent from the United States since 1924. Of 4,082 birds classified as poultry submitted for entry, 376 were rejected.

More than 40 tons of prohibited meats were seized and destroyed from passenger baggage and ship and plane food stores to prevent the introduction of disease, and 5,535 pounds of prohibited meats were seized from postal and express packages sent from abroad.

Air traffic in livestock has grown enormously in recent years. This complicates the problem of guarding against disease, for most shipments now outstrip the incubation period of nearly every disease. Except for rail shipments to and from Canada and Mexico, 63 percent of the breeding animals exported traveled by air in 1956. So did the imports—58 percent of the livestock and 83 percent of the poultry.

Domestically, control of serum and vaccine production saves farmers from serious difficulties. ARS tests these materials for purity and safety. Enough brucellosis vaccine to treat 706,129 calves was rejected and destroyed in fiscal 1956 because of contamination and lack of potency. Two percent of the materials intended for immunization against hog cholera, when presented for purity and safety tests, were found to contain the germs of swine erysipelas. These materials were condemned.

Fight Against Animal Diseases

The accelerated campaign against brucellosis, started in September 1954, has continued to reduce incidence of the disease. During fiscal 1955, 2.6 percent of the cattle blood tested were found to be reactors. During 1956, the incidence of infection, based on the number of cattle tested by both blood and ring tests, was only 1.25 percent. Three scientific weapons are used in the program: (1) A low-cost rapid milk and cream ring test that finds infected herds, (2) a blood agglutination test for individual animals, and (3) calf vaccination.

Two new States—Washington and Wisconsin—have been designated Modified Certified Brucellosis-free. They have achieved less than 1 percent of infection in less than 5 percent of their herds. Three States—Maine, New Hampshire, and North Carolina—achieved this status before the stepped-up program went into operation. During fiscal 1956, Washington ring tested 17,150 herds containing some 256,856 cattle, blood tested 15,405 herds containing 214,082 animals, found 1,907 animals that reacted positively to tests, and vaccinated 86,666 calves. Wisconsin ring tested 262,-

653 herds containing some 5.3 million cattle, blood tested 90,989 herds containing 1.8 million cattle, found 66,589 reactors, and vaccinated 548,010 calves.

In the United States, 1.7 million herds containing 28 million cattle were ring tested; 1.1 million herds containing 16.7 million animals were blood tested; 366,524 reactors were found; and 4.7 million calves were vaccinated. Cooperating State and Federal officials emphasize that the modified certified status is not to be considered a stopping point; the program should move ahead until the disease is extirpated in every State.

Vesicular exanthema, the subject of an eradication program since 1952, appears to be under control. Only two outbreaks, involving 3,400 hogs, occurred in the country in fiscal 1956. Both outbreaks were in the same State and were eradicated without spreading the disease.

Other dividends have resulted from the garbage-cooking program, the main weapon used against VE. Forty-six States require the cooking of garbage fed to swine. It is estimated that more than 85 percent of the garbage fed nationally is cooked.

As a byproduct of garbage cooking to eradicate VE, the incidence of trichinosis, both in hogs and humans, has significantly decreased.

Incomplete reports indicate a lower incidence of hog cholera, coinciding with the 3 years of garbage cooking in the VE program. The continued heat treatment of garbage, and the use of low-virulent hog cholera vaccines should make it possible to lower the incidence of the disease still further and even to eradicate it in some areas.

When meat inspectors find infected carcasses they notify animal disease eradication authorities, giving all information they have on the infected animal. This method of tracing disease is quite efficient. Researchers found in 1955 that 827 cattle must be tested to find one tuberculosis reactor, whereas only 18 animals require inspection, on the average, when carcasses found infected in meat inspection are traced back to their original herds.

In New England during fiscal 1956, meat inspectors reported two tuberculosis-infected carcasses in two Massachusetts packinghouses. Both animals had eartags from another State. The infection was tracked back through two clean herds in that State, then through cattle dealers in two other States. On the premises of the second dealer, where infection had been previously found by animal disease workers, further tracing brought to light 7 reactors in 4 herds in 1 State, 7 reactors in 3 herds in another State, and 6 reactors in 2 herds in a third State. This 4-State search thus resulted in finding 20 diseased animals that might have spread tuberculosis widely, had they not been tracked down and eliminated. Teamwork has reached such efficiency that more than 65 percent of infected carcasses reported by meat inspectors are traced to the herd of origin.

Animal disease research in 1956 came up with a group of findings on vesicular stomatitis. The disease, of no great economic importance in itself, so resembles foot-and-mouth disease and vesicular exanthema in outward symptoms that only laboratory diagnosis can distinguish them. Research on the disease was conducted at Beltsville, Md., at the Plum Island Animal Disease Laboratory, and at the Wisconsin Agricultural Experiment Station.

The virus of VS can be propagated in cultures of kidney and tongue tissue from cattle, hogs, and guinea pigs. Propagation of viruses is necessary to have a supply of the organism for research and for making laboratory compounds to identify the disease. Mature

chickens react consistently to inoculations of the viruses of VE and VS. This is important because it indicates that adult chickens may be used in tests to differentiate between the two diseases. VS, like VE, can be spread by feeding raw garbage. The natural reservoir or living source of viruses that cause occasional outbreaks of VS in domestic animals has long been a matter of speculation. It is now established that the virus may appear in earthworms on farms that have animals infected with vesicular stomatitis; it may also occur in the blood of raccoons.

Battle Against Plant Pests

The invasion of Florida by the Mediterranean fruitfly, worst pest of citrus fruits, was the biggest problem facing plant pest control officials during fiscal 1956. First reported in April 1956, by July the pest had been found in areas involving some 310,000 acres. Infested expanses were sprayed by air with a new attractant insecticide. Advanced methods of combating the fly, learned since the last outbreak in 1929–31, are being used to stamp it out.

If the Medfly were permitted to establish itself in Florida, entomologists say it would in time spread across the South and engulf West Coast citrus groves. The peach orchards of Georgia and the Carolinas would be in the path of seasonal spread. The cost of living with the pest would run $20 million to $30 million a year. Apparently, it can be totally eradicated at about half that cost.

In the 25 years that Florida has been free of the pest, it has been intercepted about 2,000 times in inspections at ports of entry, including 147 times during fiscal 1956, mainly as larvae in fruit carried in baggage and in food stores of ships and planes.

The first line of defense against imported plant pests and diseases is inspection and quarantine of cargo, stores, baggage, and mail on vessels, planes, railway cars, and vehicles. During the year 97,351 airplanes, 54,712 vessels, and 3,138,053 mail packages were inspected, in addition to 17,262,188 vehicles and 101,167 freight cars crossing the Mexican border. Interceptions of plant material numbered 244,566; interceptions of insect and plant diseases totaled 17,504.

In spite of all these precautions, some foreign pests gain entry into the United States. Examples include the golden nematode, a pest of potatoes, which has been confined to Long Island, N. Y.; the burrowing nematode, which attacks several species of hosts, including citrus trees, which has been kept within the borders of Florida; and the khapra bettle, which attacks stored grains and seeds and has not been permitted to spread beyond a limited area in the Southwest.

Some imported pests we live with. An example is the European corn borer, which has spread to 37 States in 40 years and causes an average annual loss of about $100 million.

Ginning Kills Bollworms

Carefully controlled tests by agricultural engineers and entomologists have shown that modern drying, cleaning, extracting, and ginning machinery kills practically all pink bollworms brought to gins in seed cotton. This is saving the cotton industry $2.25 million annually through the withdrawal of quarantine regulations that previously required sterilization of cottonseed at gins. Specially designed trash fans kill all pink bollworms in trash-handling equipment at cotton gins and oil mills.

The cost of research, of course, was far less than the annual savings.

Research Benefits Farm Families

A new guide to good nutrition from a varied food supply has been developed. Based on recent research on human nutritional needs, on the essential nutrients found in different foods, and on food habits in this country, it shows how items of food can be interchanged. Thus good diets may be selected despite differences in food availability, budgets, and preferences.

ARS has called attention to the need for improved diets among rural families. In one group as many as 30 percent had diets that fell below recommended levels of protein. Even more were short in ascorbic acid and in calcium.

Information has been assembled on the amount of actual food, ready to consume, that results from market purchases of meat, fruits, and vegetables processed and packaged by methods and standards now current.

Pioneering studies have been made on human requirements for eight of the "essential" amino acids, and on the fatty acid requirements of infants.

Fabric researches, put into a form usable by an average purchaser, help consumers to judge textiles for wearing qualities and their suitability for specific uses. A publication on the best use of soaps and detergents to get clothes really clean provides laundering guidance.

The high point of the year in farm housing research is a new energy-saving kitchen designed for those who, because of age or illness, must save steps and effort. Improvements include shelves measuring 27 to 63 inches from the floor, sitdown spaces at most-used work areas, and casters or wheels on heavy equipment.

New Forms for Familiar Products

Lemonade, tomato juice, grape juice, and orange juice in the next few years should have completed their cycle from fresh to canned to concentrated juices, then to powders. Lemonade powder is the latest to be produced by ARS utilization research; the powder dissolves instantly in cold water and makes a drink equal in flavor and nutritive value to lemonade from fresh juice.

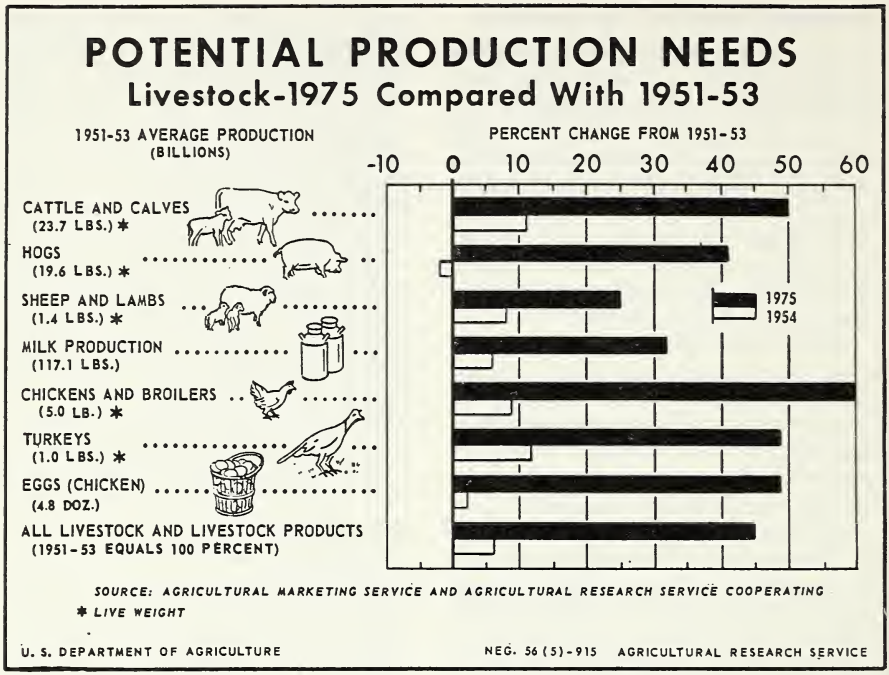
Growers of citrus fruits, grapes, and tomatoes soon may see their juice products go to market in dry containers, easy to ship and store and requiring no refrigeration. Powdered orange juice is now in commercial production for sale to large-scale users. More time will be needed to bring powdered juices into retail outlets for family consumption.

Burnable cotton cloth can be made highly flame resistant through a combination of two previously discovered chemical emulsions applied to the cloth in a one-bath treatment. Fabrics treated with either process are flame and glow resistant; but when both are used, the cloth can be exposed to an open flame without igniting. This process, discovered by ARS utilization researchers, increases the weight of the cloth about 18 percent, but normal fabric properties are otherwise little changed. The flame-resistant finish is highly durable, surviving repeated laundering and dry cleaning.

These examples of 1 year's achievement in utilization research are typical of the constant effort to find new uses and forms for agricultural products, especially for those that exist in quantities exceeding the demand.

50 Years of Meat Inspection

The Meat Inspection Service celebrated its 50th anniversary by inspecting a record 108.5 million animals in fiscal 1956, compared to 98.2 million the previous year. It


POTENTIAL PRODUCTION NEEDS
Livestock-1975 Compared With 1951-53
1951-53 AVERAGE PRODUCTION (BILLIONS)
PERCENT CHANGE FROM 1951-53
-10 0 10 20 30 40 50 60
CATTLE AND CALVES (23.7 LBS.) *
HOGS (19.6 LBS.) *
SHEEP AND LAMBS (1.4 LBS.) *
MILK PRODUCTION (117.1 LBS.)
CHICKENS AND BROILERS (5.0 LB.) *
TURKEYS (1.0 LBS.) *
EGGS (CHICKEN) (4.8 DOZ.)
ALL LIVESTOCK AND LIVESTOCK PRODUCTS (1951-53 EQUALS 100 PERCENT)
1975
1954
SOURCE: AGRICULTURAL MARKETING SERVICE AND AGRICULTURAL RESEARCH SERVICE COOPERATING
* LIVE WEIGHT
U. S. DEPARTMENT OF AGRICULTURE
NEG. 56(5)-915 AGRICULTURAL RESEARCH SERVICE

inspected and supervised preparation and processing of 18.2 billion pounds of meat products, also a record, compared with 16.4 billion pounds in fiscal 1955. The cost for Federal inspection per person is about 10 cents a year.

Meat inspection began in 1906 at 163 establishments in 58 cities. By fiscal 1955 it has been extended to 1,149 establishments in 446 cities and towns. The rapid increase in the demand for Federal meat inspection is illustrated by the increase in fiscal 1956 over the previous year—meat inspection now operates in 1,184 establishments in 471 cities and towns. The trend toward the use of 2 or 3 shifts in many plants and increased production of packaged items have added to the work of Federal meat inspectors.

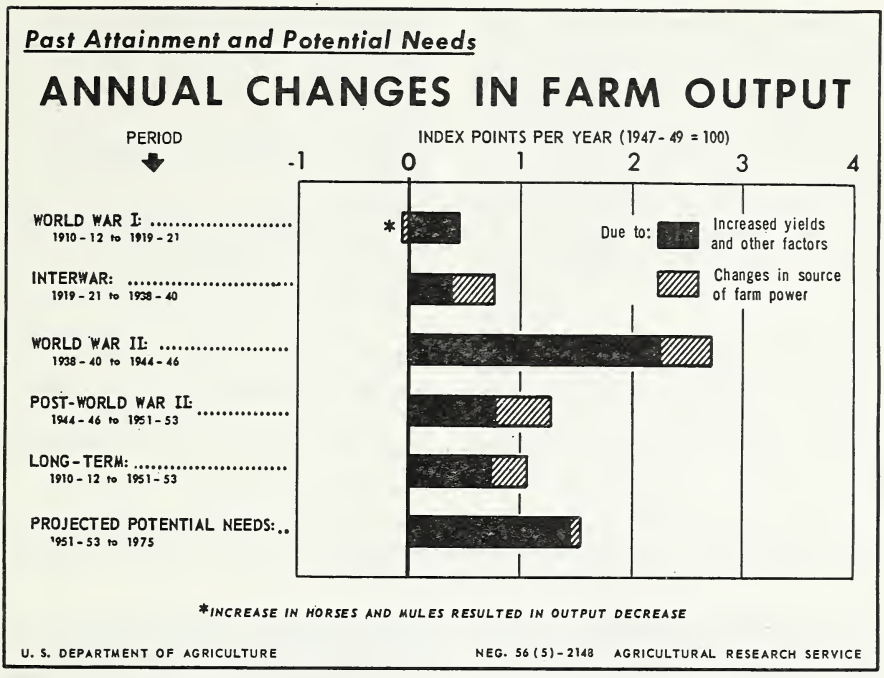
Through its 50 years' existence, the purpose of meat inspection has remained constant—"to assure the production of clean, sound, wholesome meat, free from adulteration and truthfully labeled." These standards have been maintained. Today the round purple stamp, "U. S. Insp'd & P's'd," on federally inspected meat means that it can go into any market in the world.

A Look Into the Future

ARS economic research in the field of farm and land management in fiscal 1956 projected its figures ahead 20 years to indicate the size of the production job by 1975.

Because of the expected increase in United States population and other factors, the volume of farm output needed in 1975 may be about one-third larger than the average for 1951–53. Annual increases required in farm output may be half again as large as have occurred during the past 40 years. Most of the needed increase is expected to develop after 1960.

Livestock production required to meet the demands of 1975 may run about 45 percent above 1951–53, ranging from a 25-percent increase



in sheep and lambs to a 60-percent rise in chickens and broilers. A 50-percent increase may be needed in cattle and calves.

Crops would have to be stepped up 25 percent over those of 1951–53. The largest expansions would be in soybeans (65 percent), tobacco, corn, and hay, in that order. With a limited amount of land available for crop expansion, future production needs loom large when judged by past performance. Technological improvements, however, step up farm output substantially. Since about 1940, production has run ahead of population increase. The important questions of the future will probably revolve around *how*, rather than *whether*, the job can be done. Maintaining or lowering production costs and adjusting production to changing market requirements will continue to be prime problems for agriculture in the years ahead.

COOPERATIVE AGRICULTURAL EXTENSION SERVICE

The F. K.'s faced a crucial, long-range decision: Should they stay in dairying or shift to meat animals? From 6 poor milkers in 1946, they had built up a 20-cow herd averaging 400 pounds butterfat, well above average. But an Extension analysis showed they were spending undue time and labor on their cows; and they would have to enlarge their herd to maintain family income.

After several visits to their county agent and much deliberation, they decided to sell the herd. Now they are specializing in hogs—630 of them in 1955—and 33 feeder steers. Their gross income in 1955 was twice as much as in 1954. And they figure that, after completing the change, they'll cut labor time by 15 to 20 percent compared with dairying.

Since 1946 the K.'s, using a long-range farm plan, have built up a 200-acre rundown farm near Kellogg, Minn., bought another 50 acres, and remodeled their 75-year-old house.

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This is an example of Extension's efforts in helping people to help themselves. Nationally during calendar year 1955, the 10,800 Extension county workers assisted a new record of 9,635,000 families to change farming or homemaking practices, a 7-percent increase over 1954. Assistance to farmers was 5 percent more than in 1954, and aid to homemakers was 7 percent higher.

County Extension work was planned by 28,750 advisory committees totaling 670,000 men and women and conducted by 10,800 county workers aided by 1,235,000 local leaders. Available by request to help Extension were 2,400 agricultural and home economics State specialists. Only 104—less than 1 percent—of the total county-State-Federal professional Extension staff are located in Washington, D. C.

Program projection, a continuing program of long-range, county program planning, was the major, new effort of Extension work for 1955–56. This is a group method for helping people plan their own sound programs. During 1955, people in 394 counties made a 5- to 10-year analysis of their problems and possible solutions.

"It [program projection] has brought people together and helped them see their needs more than any other Extension planning program we've ever had," declares T. M. Hepler, Montgomery County, Va., county agent.

North Carolina leaders say program projection is turning up many opportunities for expanding net farm income. And it is pointing out adjustments that Extension should make to be more useful to the people.

The enlarging farm and home development program—personal counsel with individual families—has revealed new opportunities. An Indiana survey showed that FHD cooperating families had the potential for increasing net income by an average of $3,000 per family. In one county alone the potential increase was 94 percent, at current farm prices.

In other Extension work, cost cutting and greater efficiency were major problems.

A Decorah, Iowa, farmer cut his hog-feeding costs $2,700 during 1955 after State specialists had noted his unduly high cost for purchased protein supplement and had recommended steps to reduce it.

In Texas a rancher with 115 beef cows formerly produced 43,000 pounds of beef. To reduce costs he culled his herd to 84 of the best producers and still sold 41,000 pounds of beef. The 3-cent premium for better quality calves produced after culling enabled him to earn about $1,000 more—even though he sold 2,000 pounds less beef.

In Louisiana a statewide farm organization wrote the dean of agriculture at Louisiana State University that " * * * it is our conservative estimate * * * that the [cotton] crop would have been reduced by $27 million statewide * * * due to insects * * *" except for timely new recommendations from LSU research entomologists through Extension (parish) agents to control boll weevil. New controls were required because the insect had developed partial resistance to chemicals formerly recommended.

Extension workers also helped with a coordinated educational program throughout the Cotton Belt to cut down excessive losses to spinning mills, caused by improper machine picking, handling, and ginning. Within about 110 days an estimated one-half of all owners and

operators of mechanical pickers in the United States had attended area or community schools to learn more fully about proper operation of pickers.

Close, cordial cooperation among research, industry, trade groups, ginners, Extension folk, and others made this broad-scale program possible. Cotton growers, processors, and consumers stand to gain millions of dollars through higher quality.

As for marketing, Washington apple growers fortunately sold their 1955 crop in an orderly manner. Production was up 24 percent over the year before, the crop matured 2 weeks late, and the trade was not fully aware of this price-depressing situation. The extension marketing specialist urged growers and the trade to push sales and move the crop rather than store it for higher prices. The result was fairly orderly marketing with no season-end dumping. Despite slightly lower prices, this outlook information saved Washington growers and the apple industry millions of dollars.

Extension workers helped families meet natural disasters. In the California flood of Christmas 1955, all 42 northern and central counties were deluged by an unprecedented general storm. One-quarter of Sutter County was flooded in less than 8 hours. In the 42 counties an estimated 4,926 farms and 220,292 homes were listed in distress. There were 74 known dead. Private and public property damage exceeded $170 million.

Acting before the storm had subsided, University of California agricultural officials directed the State Extension staff to give whatever assistance was called for in each flooded area, in any field not already served by another agency. Transfer of personnel from other counties, as required, was also authorized, as well as publication, on a top-priority basis, of needed emergency information.

At one time 52 county and State Extension staff persons were working out of the county agent's office in nearby Marysville, giving aid to stricken farm and home owners in hardest-hit Sutter County. And 37 leaflets supplying vitally needed facts on recovery measures were prepared in only 10 days, published in quantity for general use and distributed with great speed.

Saturday, Sunday, holiday, and night work was the order of the day for Extension administrators, county and State staffs, publications' editors, printers, and others until the emergency had passed. Door-to-door personal contact was the only means of communication in some areas temporarily without electricity. Flood repair work on farms and in homes continued for many months.

Quite a different part of Extension work is Extension's own efforts at research and training. Research probes for ways to improve the entire program through better organization, program planning, and teaching methods. Training aims at keeping all Extension workers up to date on newest factual information and teaching methods.

Underscoring the need for efficient training is the average potential workload per county worker. For 1955, estimates of the average number of *rural* families to be reached totaled 3,740 per agricultural agent, 6,144 per home agent, and 2,963 per youth (4–H) worker. These figures include rural nonfarm (smalltown) families, but exclude urban families. Among the 9,635,000 families aided in 1955, however, 42.4 percent were farm families, 21.1 percent rural nonfarm, and 36.5 percent urban.

4–H Clubs

About 2,156,000 boys and girls are now enrolled in 4–H Clubs, a 2.4 percent gain over 1954. Mem-

bership in 4–H produces personal, family, community, and county benefits, rich gains acquired no other way.

4–H homemaking projects produced enriching values for a Waukesha County, Wisc., girl. She writes modestly: "It was during this period (the 18 months of her mother's illness, ending in death) that I really appreciated, and my family also, all that I had learned in my 4–H Club work. I took over the complete management of our household, doing all the cooking, laundry, cleaning, and everything else that needed to be done. The experience that I gained during that time, I know, will be of great value in my future years as a wife and mother."

The foremost challenge facing Extension workers is to provide families with counsel and guidance, as requested, in a meaningful, broad scale, coordinated educational program. Extension workers accept every challenge and opportunity with faith that the need can be met.

FARMER COOPERATIVE SERVICE

One morning during the past year a representative of a group of potato farmers called on the Farmer Cooperative Service. Disturbed about marketing their crop, these growers were interested in organizing a cooperative, but they wanted to be sure they got off on a sound basis.

An FCS staff member spent two days with the farmers and their board of directors—asking questions, checking what they planned to do, and suggesting ways to avoid pitfalls in their organization and early operations.

The outgrowth was the first potato marketing cooperative to be established in this important potato producing section of the country. Now, for the first time, farmers there have the opportunity to market through their own farmer-owned and controlled organization. A letter from the group said, in part: "The Board of Directors of _____ Cooperative Association would like to express our gratitude to you for the assistance you have given us. Mr. _____ has been most cooperative and valuable to us.

"As you probably know we have made several trips around the northeastern sections of the United States visiting other cooperatives, seeking information on operations. * * * We believe that Mr. _____ has helped us more in the short time that he has been with us than we learned traveling all over the Eastern States.

"Thank you again for your assistance in getting our cooperative started on the right foot.

"Very truly yours."

This is an example of Farmer Cooperative Service work. Through its research, service, and educational activities this Service touches the economic lives of 3 out of 5 American farmers and has a deep influence on the agricultural economy of the entire country. Cooperatives market about $7 billion worth of farm products and handle about $2 billion worth of farm supplies. They have a weighty voice in the economic affairs of their associated farmers.

The Farmer Cooperative Service helps farmers to help themselves in their marketing and buying. Here are a few examples.

FCS made a comparative analysis of costs and production in 13 cooperative cottonseed oil mills. As a result, several mills reduced certain unit operating costs. One worked out a more economical insurance program. Another reorganized its lintroom operations and reduced labor costs by 50 percent.

To aid dairy farmers develop more effective sales programs for their milk marketing cooperatives, FCS studied the sales activities of selected associations and reported in a publication the essential features of a successful sales program. Milk marketing cooperatives of all types, dairy trade associations, State departments of agriculture, land-grant college staff members, and the industry as a whole made many favorable comments on the timeliness and value of this study.

Some 90 large turkey growers in the West, who market 5 million pounds of dressed turkeys yearly, asked for help. An FCS study showed how their association could strengthen its financial structure and improve operations. The secretary-treasurer of the co-op commented, "This report is going to be our 'Bible' and will be well used in the future."

FCS assisted in setting up a pilot-plant operation to study the bulk system of handling citrus in California. Results indicated that growers reduced costs about 3 cents a field box, with an expectation of saving 5 cents a box in the future.

Farmers today spend nearly half their gross farm income for production supplies. Memberships in farm supply cooperatives have gone up 100 percent in the past decade, and 7,500 cooperatives now handle some type of supplies.

One association serving 70,000 farmers through 48 locals found itself with growing pains because of the increased demands for service to farmers during the past 10 years. FCS studied its operations and made recommendations. The management of the association said:

"We cannot compliment too highly the thoroughness and the frankness and the helpfulness of your department in this study and report."

At the request of the regional petroleum cooperatives, FCS has been cooperating with them on a nationwide study of how farm deliveryman are paid by local petroleum cooperatives. The result has been an increase in the use of incentive plans, with higher volume per man, lower delivery costs, and much less employee turnover. Farmers thus benefit from better service, greater net savings, or both.

A study in four North Central States showed that distribution from plants to farms represented 25 percent of the farmers' total fertilizer cost. Transportation accounted for about 40 percent of the distribution bill. The study found that more direct plant-to-farm deliveries and advance ordering and storage by local cooperatives and farmer-members could improve service and lower costs.

Farmers in several areas now operate plants to market their alfalfa in dehydrated form. An FCS study showed that operating costs in many of these plants could be reduced by a third. If these savings were applied to just half the total production of dehydrated meal, a saving of $5 million would accrue to plant owners, growers of alfalfa, and buyers of meal.

At the request of a large number of cooperatives, FCS studied the financing of cooperatives' operations. Some 10,000 farmer marketing and farm supply cooperatives do a $9.5 billion annual business on a net capital investment of $1.8 billion. Annual net savings and margins run to an estimated $250 to $275 million. Preliminary findings show farmers' investments amount to nearly 59 percent of total assets, borrowings comprise a little over 25 percent, and other liabilities amount to 16 percent. Cooperatives, according to this study, make extensive use of the revolving fund method of financing.

FCS has found that one of the most successful training devices in youth educational work on cooperatives is formation of a junior cooperative run by the boys themselves. A vocational agriculture teacher reports about such a co-op—"Its net proceeds amounted to $1,950, sufficient to buy a new ¾-ton pickup truck. This activity amply demonstrated to the boys the reward for group action. The organization and operation of a chapter cooperative is the practical application method needed to develop true understanding on the part of the boys."

Interest of foreign countries in American farmer cooperatives continues high. FCS helped 334 trainees and visitors representing 52 countries on their trips here by giving them background information and arranging field contacts with cooperatives.

Requests for FCS publications are steadily increasing. FCS Bulletin 1, *Farmer Cooperatives in the United States*, is now being used in practically every land-grant college as a supplementary text on this subject. During the past year FCS issued some 62 new publications on various cooperative subjects. Many of these are designed especially for educational use. Others report research findings that are particularly valuable for cooperatives.

In carrying on its program Farmer Cooperative Service maintains close working relationships with the land-grant colleges, State cooperative councils, banks for cooperatives, and others directly concerned with the progress and problems of farmer cooperatives.

FCS continued to use the *News for Farmer Cooperatives* as its regular monthly contact with cooperatives and the many educational agencies working with them. Many comments from readers attest to the value of this magazine in publicizing research results, educational material, and other timely information.

A new movie, "Farmer Cooperatives Today," a factual presentation of how cooperatives help farmers meet their economic problems, was completed as the year ended.

AGRICULTURAL CONSERVATION PROGRAM SERVICE

In the mountain valley of Choestoe Community in Union County, Ga., lie 12 subsistence-type, owner-operated farms containing 1,317 acres of land on steep hillsides and in fertile bottoms. Off-farm income is negligible. Until recently, more than 90 percent of the 663 acres of open land, including steep hillsides, was used to produce corn, sorghum for sirup, and other row crops. Annual rainfall is heavy, and severe erosion was gullying the hillsides and covering the bottom land with poorer hill soil.

Permanent vegetative cover was needed to stop erosion, improve soil productivity, and increase farm income. Establishing cover was unusually difficult, necessitating better than average land preparation and rapid growth. It was necessary for these farmers to change their systems of farming, and they wanted to do so. Lack of economic resources, however, kept them from planting more than a limited acreage of cover.

They requested maximum assistance available under the agricultural conservation program.

Here is what happened.

Using ACP cost-sharing to the extent available, these 12 farmers before 1954 established 397 acres in perennial grasses and legumes. From 1954 to 1956 they established 189 more acres in perennial cover, receiving ACP cost-sharing of $1,607 on 114 of these acres. They invested some of their own money in materials, and they furnished labor and equipment for land preparation and planting.

Besides the 189 acres of new cover, they improved 141 acres of existing permanent cover, planted 46 acres of cover crops on cultivated land, and installed 2,500 feet of tile drains in bottom land, receiving total ACP cost-sharing assistance of $1,865. While making these land adjustments, they carried on their normal farming operations and maintained other conservation measures.

Today, 586 acres are in permanent cover. The 77 acres of land in the valley left in crops are almost entirely bottom land. Virtually no open land is idle. Nearly 300 cattle, mostly purebred or grade beef type, are grazing on the land. Soil fertility and standards of living are increasing steadily.

The following specific example shows how one of these 12 farmers has used ACP assistance. His farm is mostly steep hilly land with a small acreage of fertile bottom land. He has 125 acres of open land, a little over half of the total farm area.

He has used the fertile bottom acres for corn and other feed grains until the streams on the farm began to overflow and cut into the topsoil. To prevent further erosion, he seeded this bottom land in a protective cover. He now rents land to grow feed grains.

Using all the ACP assistance available to him, this farmer completed the following practices:

Year	*Practice completed*	*Acres*	*Amount received*
1953	Establishing permanent cover	20	$390.40
1954	Establishing permanent cover	15	210.80
1954	Tile drainage, lin. ft.	500	50.00
1954	Drought emergency (temporary cover)	17	85.00
1955	Establishing permanent cover	16	254.44
1955	Improving permanent cover	20	120.00
1956	Establishing permanent cover	10	153.55
1956	Improving permanent cover	12	80.50
	Total cost-share 4 years		1,344.69

He matched the cost-sharing, and he seeded and reseeded additional acreage on his own. Each year he has applied maintenance fertilizers to most of his acres. He has shifted to livestock and is doing an excellent job of farm management.

Thus, the ACP shares with farmers and ranchers throughout the Nation the cost of certain practices to conserve and protect farmland (including cropland, woodland, orchards, idle land, pastures, or range) and to control and soundly manage agricultural water resources. Besides financial assistance, the ACP helps bring farmers other aids to insure that the conservation investment (both public and private) will be wisely used. Technical help, latest approved methods, conservation materials, education and information on practices needed, and alternative uses to which land may be put are furnished either through agreement with Soil Conservation Service and Forest Service, through the Agricultural Stabilization and Conservation committees, or in cooperation with other agencies and private businesses.

The farmer or rancher receiving help makes a major contribution to the establishment of practices, and maintains them without further assistance for at least the normal life of the practices.

Farms on which ACP shared costs of one or more needed conservation measures in 1955 included more than one-third of the total farmland in the Nation.

The program is coordinated nationally by the Agricultural Con-

servation Program Service and is administered by Agricultural Stabilization and Conservation committees in all agricultural counties in each State. Each committee is composed of farmers. The State director of extension is a member of each State ASC committee and the county extension agent is a member of the county ASC committee or secretary to it.

Every year the program is adjusted according to conservation needs.

The regular ACP is supplemented from time to time to meet certain emergencies. A supplemental program in 1955 placed special emphasis on practices to meet wind erosion problems in the Great Plains area. Because floods and hurricanes also damaged farmland in a few States during 1955, another special effort supplemented the regular ACP and helped farmers rehabilitate damaged farmland.

The ACP is flexible enough to help solve individual farm conservation problems, or those of several farms having a mutual problem. It is able to fit within the framework of other projects, such as watershed or flood control, and within the efforts of a soil conservation district or a community.

Thus individual effort—backed up with public help in the public's interest—achieves more conservation than would otherwise be possible.

During the past three complete program years, an average of 1,421,000 farmers, with 38 percent of the Nation's total farmland, have carried out conservation with ACP cost-sharing. In these 3 years, they have—

Planted 41,855,000 acres of permanent and annual cover and 346,000 acres of trees for conservation purposes.

Performed emergency tillage and stubble mulching on 41,904,000 acres to help hold the soil against wind erosion.

Established 3,944,000 acres of contour stripcropping, terracing, and other forms of contour farming to better manage and conserve soil and water.

Established 4,829,000,000 square feet of sod waterways to dispose of water without erosion.

Constructed 234,382 dams and structures for water facilities to permit grazing management to protect vegetative cover.

Applied 42,781,000 tons of liming materials to permit growth of conserving cover for soil protection and erosion control.

SOIL CONSERVATION SERVICE

Three brothers, who operate a 200-acre dairy farm near Montpelier, Vt., tried several ways to increase their milk production and profits. One year, for example, they applied 18 tons of phosphate fertilizer; they increased production some, but barely enough to pay for the fertilizer.

In 1949, the brothers decided to seek advice from soil scientists about the capabilities and needs of their land. Going to the headquarters of the Winooski Soil Conservation District, they asked for help on their conservation and production problems.

An SCS soil surveyor studied the brothers' farm. His survey indicated that to rejuvenate the land, the brothers should first remove surface boulders, stumps, and brush from the pastures and meadows. Only then could liming, fertilizing, and reseeding practices really pay off. Local SCS technicians helped the brothers draw up a long range conservation plan for the entire farm.

The brothers hired a bulldozer operator to clear out the boulders and stumps. Then they limed, fertilized, and reseeded pastures and meadows.

Production figures tell the story of their success with conservation farming. In 1948 the brothers, milking 43 cows, sold about 100,000 pounds of milk. In 1955,

milking 72 cows, they sold about 400,000 pounds of milk. Almost every winter up to 1948, they had been buying hay for their 43 cows. In 1955 they bought no hay for their 72 milk cows, and they do not expect ever to buy hay again. Mainly because of selective grading and more and better forage, their cows are producing more per head. Ten years ago the brothers got only about 3 months' grazing each year from relatively poor pastures. Now they get 6 months' grazing from luxuriant clover and grass pastures.

One of them says, "Our farm is still improving. Now we need more cows to keep up with the grass growth. We've got hay and forage to spare."

The Vermont brothers are typical of modern American conservation farmers who received technical aid from the Soil Conservation Service through their locally organized and operated soil conservation district.

During fiscal year 1956, the Soil Conservation Service gave technical aid and other assistance to 2,700 soil conservation districts in which there were more than 1,600,000 cooperating farmers and ranchers. The Service assisted more than a million farmers and ranchers in planning and applying some parts of their conservation plans in 1956. Soil surveys were made on more than 31 million acres of farmland and range-site surveys on an additional 11 million acres. Basic conservation plans were developed with 89,262 cooperating farmers and ranchers whose lands cover more than 27 million acres. Such plans were revised on another 8,770 farms and ranches that included more than 3½ million acres.

In addition, the Service provided technical assistance on 2,200 group drainage jobs and 813 group irrigation jobs that affected nearly 3 million acres.

Service technicians also assisted local farmers and ranchers with the application of many conservation practices requiring special technical skills. Some of the more commonly used practices applied by cooperating farmers and ranchers during the year include: Contour farming, 2,965,786 acres; conservation crop rotations, 8,252,015 acres; pasture planting, 2,766,565 acres; range seeding, 511,556 acres; improvement cutting of woodland, 1,188,926 acres; tree planting, 351,479 acres; windbreak planting, 1,687 miles; wildlife area improvement, 402,974 acres; terracing, 52,187 miles; diversion construction, 5,590 miles; pounds constructed, 78,869; waterway development, 79,229 acres; sprinkler irrigation systems installed, 7,362; improved water application for irrigation, 1,719,558 acres.

During 1954 and 1955 about 3⅓ million acres were converted from cultivated crops to grass and trees on farms and ranches serviced by SCS. For the past 5 years the average rate of such conversions has been about 1,500,000 acres per year. Partly offsetting the conversion of cropland to other uses is the conversion of certain lands to cultivated crops. In 1954 and 1955 about 1,500,000 acres of grassland and woods were converted to cultivated crops. Thus the net reduction in cropland through long-term conversion in 1954 and 1955 was about 1,750,000 acres. Data from previous years indicate an average annual reduction of about 1 million acres a year from cropland.

SCS estimates that 44,733,000 acres of land used for cultivated crops need to be converted to permanent grass cover. An additional 7,690,000 acres of cropland need to be converted to woodland. Thus, at least 52 million acres of cropland need to be converted to long-term vegetative cover.

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Watershed Protection

The Tongue River watershed in Cavalier and Pembina Counties of North Dakota covers 655 square miles, or 419,000 acres. The Tongue River flows into the Pembina River just before the Pembina enters the Red River of the North. Eighty-four percent of the farmland (700 farms) in the watershed is used for cropland. Small acreages are used for woodland and pasture.

In the spring, floodwaters, originating in the upper part of the watershed, customarily inundated large areas of the cropland on the flood plain of the river. Planting of crops had to be delayed while the water drained slowly from flooded land. The growing season was shortened. Crops often failed to mature. In some years a part of the flood plain was so inundated that no crop could be planted.

The people of the Tongue River watershed, through their soil conservation districts, asked the Department of Agriculture to help them solve their watershed problems. In September 1953, the Tongue River watershed was designated as one of the small watersheds on which the Department agreed to cooperate as a demonstrational or pilot watershed. These pilot watersheds were set up to show how installation of land treatment measures combined with appropriate structural measures in small streams would help solve watershed problems.

SCS technicians, working with the local people, developed a plan for the Tongue River watershed. It calls for an accelerated program of land treatment and the installation of appropriate structural measures. The planned structural measures are 11 floodwater retarding structures, 56 miles of stream channel improvement, and 31 miles of floodways. The capacities of the improved channels and floodways are geared to the rate at which water will be released from the 11 floodwater retarding structures.

By July 1956, 2 floodwater retarding structures had been completed, 2 were under construction, and 2 others advertised for bids. Three other floodwater retarding structures were in the advanced survey and design stage. A contract had been let to construct 11.5 miles of floodway, and planning was underway on an additional 20 miles. Eleven miles of stream channel improvement had been completed. It is expected that the installation of watershed treatment planned for the Tongue River watershed by the local people and the Department of Agriculture will be completed by the summer of 1960.

Watershed protection work on 57 other small watersheds, similar to that on the Tongue River watershed of North Dakota, is underway and showed substantial increases during the year. Work plans have now been completed for nearly all of the 58 pilot watersheds, comprising more than 3 million acres. Structural work completed during the year includes: 70 floodwater retarding structures which contain about 33,850 acre-feet; 153 stabilizing and sediment control structures; 39 miles of channel stabilization and improvement; and 58 miles of roadside erosion control work. About 4,300 acres of grasses and legumes were planted on critical silt areas and another 138 acres were planted to woody plants. These and other conservation practices that provide on-the-farm as well as downstream benefits were applied at increased rates.

In addition, at the end of the fiscal year, local organizations on small watersheds had submitted 202 applications for assistance under the provisions of Public Law 566, the Watershed Protection and Flood Prevention Act of 1951. To help local people prepare complete plans for watershed protection and development, 172 small watersheds were authorized to receive technical

assistance. Plans were completed on 13 watersheds and authorization was granted for Federal financial and technical assistance to begin the installation of needed works of improvement.

Flood Prevention

Flood prevention work continued in the 11 watersheds, covering more than 30 million acres, authorized by the Flood Control Act of 1944. About 260 detailed flood-prevention work plans for more than 14 million acres have been prepared, 78 during the past year. Others are in process of preparation on a subwatershed basis where there is local interest and support. Some of the accomplishments in flood-prevention watersheds include: 104 floodwater retarding structures comprising more than 50,000 acre-feet; 1,358 stabilizing and sediment control structures; 413 acres of grassed waterways; 194 miles of channel stabilization and improvement; and 422 miles of roadside erosion control. Revegetation with grasses and legumes was completed on 13,290 acres, and revegetation with woody plants on 26,900 acres. Regular farmland treatments were also applied at increasing rates during the year.

Assistance to ACP

The Soil Conservation Service continued to assist ACP participants who were cooperating with ASC county committees. Nearly 300,000 district cooperators who were also ACP participants were serviced in carrying out ACP practices during the year. And SCS provided technical assistance to another 141,000 farmers and ranchers, who were not working with districts but who were participating in the ACP program. Most of the work was on permanent-type practices which will provide enduring benefits to the land.

Conservation Needs Inventory

On April 13, 1956, my memorandum No. 1396 was issued requiring that departmental agencies participate in a national inventory of soil and water conservation needs. The departmental committee was established under the leadership of the Soil Conservation Service, and preliminary policies and procedures were developed.

The Great Plains Program

Federal legislation is enabling the Department to cooperate more extensively with the 10 Great Plains States in furthering their conservation programs. This legislation (H. R. 11833, 84th Cong., 2d sess.) authorizes me to enter into conservation program contracts with Great Plains States farmers and ranchers for periods up to 10 years.

The Department moved promptly to adjust its programs to Great Plains needs. In cooperation with State experiment stations, the USDA's Soil Conservation Service speeded up soil mapping in the 166 critical drought counties. Immediate attention was given to critical areas where soil survey data are needed at once as a basis for land-use shifts.

About 122½ million of the 125 million acres in this area are in soil conservation districts organized to conduct effective conservation programs under local direction.

Other USDA agencies continued to develop programs and made program modifications to sharpen their effectiveness in using crop insurance, credit, cost-sharing in conservation work, research, education, and technical assistance as tools for developing a better land use program for the Great Plains.

FOREST SERVICE

The Centerville and Parrish watersheds, each about 3 square miles in size, lie side by side on the western slope of the Wasatch Mountains in Davis County, Utah. In the Centerville watershed the mixed tree, brush, and herbaceous vegetation has never been depleted, though it has been moderately grazed for many years. Since settlement began in the valley below more than a hundred years ago, no serious summer storm flood has ever swept down from this Centerville watershed.

But from adjoining Parrish Creek, floods began to harass the valley with increasing frequency in the early decades of this century. In 1930, four devastating mud-rock floods poured from this watershed, spreading mud and gravel over hundreds of acres of farmland. They wrecked a schoolhouse and several homes, washed out the railroad and the highway.

In the Parrish watershed, plant cover had been depleted on headwater areas by overgrazing. Following the 1930 floods the area was closed to grazing, and in 1934 the Department's Forest Service began to contour-trench the flood source areas and seed them to perennial grasses.

Since completion of these restoration measures, no more mud-rock floods have come from Parrish Creek, although many heavy rainstorms have hit the watershed. During eight of these storms, maximum rates of rainfall exceeded 3 inches per hour; on two occasions they exceeded 5 inches per hour.

Parrish Creek now runs as clear as Centerville Creek. Water from both streams goes into local domestic and irrigation water systems. Instead of an increasing flood menace to the valley below, Parrish Creek is again a source of high-quality water for Davis County farms and communities.

The National Forests

Protection of watersheds is the most valuable service of many of the national forests. During fiscal 1956, special work was done on 30 national forest areas to reestablish watershed stability and improve hydrologic conditions. Three of the projects received contributions in cash or direct participation in the work from local communities (the towns of Narrows and Marion, Va.; and Blanding, Utah).

During the fiscal year, 6.9 billion board-feet of timber were cut on the national forests. This set a new record, exceeding the 1955 cut by more than half a billion board-feet. The sustained yearly cut can be increased as growing stock is built up, and as more roads are constructed to reach inaccessible stands. The Forest Service made more than 29,000 sales of timber and other forest products during the year. Most were small sales to small operators.

In southeastern Alaska, the Forest Service made preliminary award of a contract for sale of 5¼ billion board-feet of timber in the Sitka area, to be cut during the next 50 years. The successful bidder is an Alaska corporation backed in part by Japanese capital. A pulp mill of 300 tons' daily capacity will be constructed near Sitka to process this timber. This was the fourth large sale made by the Forest Service in the Territory.

Preliminary award was made in Colorado for the sale of some 3 million cords of dead Engelmann spruce, killed by a recent epidemic of spruce bark beetles. The sale will result in the installation of Colorado's first pulp and paper mill, and the salvage of a large amount of beetle-killed timber.

The sale and salvage of some 100 million board-feet of timber killed by the Haystack fire on the Klamath National Forest, Calif., in 1955, was underway in 1956. This was

expected to result in the salvage of the fire-killed timber of merchantable size. A fine crop of young timber, however, was completely destroyed by the fire.

Treatment to increase growing stock, or to improve its quality, was carried out on more than a million acres in the national forests.

This included: Tree planting or seeding on 60,040 acres; seedbed preparation work to facilitate natural restocking on 37,758 acres; timber stand improvement, thinning, removal of "weed" trees, and plantation release on 400,124 acres; pruning of crop trees on 108,672 acres; control of hogs and other destructive animals on 332,538 acres; rodent control on 97,743 acres; and disease control (other than blister rust control) on 27,889 acres.

Twelve forest tree nurseries operated by the Forest Service produced about 119.4 million trees. Thirty-one million trees were planted on national forest lands, and the remainder were furnished to other Federal and State agencies under cooperative agreements.

On national forest ranges, 1,106,026 cattle and horses and 2,822,356 sheep and goats grazed under paid permit in 1955. In addition, several million calves and lambs under 6 months of age grazed without charge. Grazing receipts were $2,906,282 for fiscal year 1956. Free use was permitted, mainly for local residents' work and milk animals, for some 32,000 cattle and horses, and 5,000 sheep, goats, and swine.

Recreational use of the national forests in 1956 was expected to exceed the 45,713,000 visits in 1955, an alltime record.

The Forest Service made a study in 1956 to determine what facilities will be required for prospective public recreational use of the national forests during the next 5 years.

The Service expanded its cooperative work with the States for wildlife management on the national forests. New cooperative agreements were entered into with State fish and game management agencies in Oregon, Washington, Kentucky, Illinois, Ohio, and Virginia.

As of June 30, 1956, approximately 1,200,000 acres of acquired lands under Forest Service jurisdiction were under lease for the production of oil, gas, and certain other minerals. More than 54,700 permits authorizing other special uses of national forest lands were in force last year. These included such uses as airports, telephone lines, radio and TV sites, schools, resorts, and summer homes.

During the year the Forest Service built or improved 678 miles of road and 66 bridges to provide access to timber management areas in national forests. An additional 2,144 miles of permanent national forest roads were built or rebuilt by purchasers of timber. The Forest Service also built or rebuilt 119 miles of roads and 177 miles of trails primarily for the accommodation of hunters, fishermen, campers, and other recreationists. At the end of fiscal 1956, the national forest transportation system comprised 123,800 miles of development roads, 116,000 miles of trails, and 185 landing fields.

The Southeast in March had an above-normal number of forest fires, including the Buckhead in Florida and Georgia which alone burned 75,000 acres, 30,000 of them national forest land. In southern California, bad fall and winter fires, all man caused, burned a total of about 135,000 acres, one-quarter in national forests. Twelve fire fighters lost their lives in these California blazes. In May and June of 1956, national forests in New

Mexico and Arizona had their worst fire season on record.

The year saw the practical application of modern forest fire-fighting equipment. Aerial water dropping, use of helicopters in the initial attack and in support of ground forces, and the application of fire-retardant chemicals produced promising results.

As of June 30, 1956, the 149 national forests and related lands under administration of the Forest Service included 181,058,682 acres. Under authorization of an act of Congress passed in 1954, the Department of Agriculture exchanged 241,000 acres of national forest lands for 242,000 acres of Oregon and California land administered by the Department of the Interior.

The Service administers some 7 million acres acquired by the Government during the depression years in a program to remove submarginal lands from farming, under title III of the Bankhead-Jones Farm Tenant Act. Requests are pending for transfer of a substantial portion of these lands to other Federal agencies. During the year, through land exchanges, sales, transfers to other agencies, and reconveyance to former owners, a net decrease of 9,595 acres was made in the total acreage.

On national forest lands, the Forest Service collected cash receipts totaling $114,793,098 in fiscal year 1956, the highest on record. This compares with $79,520,880 for 1955. Twenty-five percent is paid to the States to be distributed for county road and school funds in the counties containing national forest lands. Ten percent is approtioned for road and trail construction and maintenance in the national forests.

Expenditures for protection, management, and development of the national forests amounted to $94,406,237. This included both operating expenses and capital expenditures such as for road construction, but not the 25 percent payments to the States.

Cooperative Work with the States

In Pike County, Ky., an owner of some 300 acres of farm and wood land had been offered various sums for land and timber. Reluctant to sell, since this was his birthplace, he called on the local forester, who showed him how to mark the timber for a selective cut. Working closely with the timber buyer and sawmill operator, the forester was able to get a considerable quantity of low-grade material used along with the better trees; thus a harvest and improvement cutting were combined. Buyer and operator are satisfied with the deal and are interested in future marked timber. The owner received about $2,000 more for the marked timber than he had been offered for the land and timber. He still has his land and the prospect, within 20 years, of another harvest cutting of better quality timber.

During fiscal 1956, some 285 cooperative service foresters assisted 38,121 woodland owners to practice better management on 3,124,744 acres of woodlands. Utah joined the cooperative program during the year, and the program was reestablished in Montana and Pennsylvania, bringing the total number of cooperating States to 41.

The Department cooperated with 44 States and the Territory of Hawaii to provide systematic protection against fire for State and private lands. During the year North Dakota came into the program. Cooperative protection was extended during fiscal 1956 to about 4.8 million acres, bringing the total area covered to 387 million acres.

About 44 million acres of State and private forest and watershed land, however, still remain without organized protection against fire. In calendar year 1955, 138,350 forest fires burned 7,424,000 acres on State and private land; 11.3 percent of the unprotected area was burned, compared with 0.6 percent of the protected area.

The Forest Service cooperates with 44 States, Hawaii, and Puerto Rico in the production and distribution of trees to farmers and other landowners. Minnesota entered this cooperative program during the year. Distribution from the State nurseries amounted to approximately 559 million trees in 1956, an increase of about 60 million over the preceding year and enough to plant about 560,000 acres. Private landowners' interest in woodland planting last year was at an alltime high. Interest will grow still more because of the Soil Bank program. An increase in production of several hundred million trees annually is expected.

A naval stores program, administered by the FS for the Agricultural Conservation Program Service, provides assistance to gum turpentine farmers who follow conservation practices. In the 1955–56 season, 2,454 producers participated in the program, representing 49 percent of the producers and about 92 percent of the total production.

Cooperating with State agencies, counties, townships, and landowners, the Department last year continued its blister-rust-control program. The control area comprises more than 23 million acres. On about three-fourths of this, control has been established and is being maintained.

A total of 1,816,103 acres in the northern Rocky Mountain, Intermountain, and Pacific Northwest regions was airplane sprayed during the year for the control of the spruce budworm. Most of the acreage involved was Federal land.

Control work to combat heavy infestations of spruce bark beetles in national forests of the northern and central Rocky Mountain regions has reduced the infestations; maintenance control by logging, supplemented by some chemical treatment mainly in isolated areas, should meet the need until the outbreak subsides. In Idaho and Montana, a major epidemic involving eight national forests and adjacent areas was controlled largely by logging of infested trees.

Cooperative projects to combat the oak wilt by logging of infested trees were carried on in Pennsylvania and North Carolina.

The Forest Service shared in developing work plans in 100 of the 172 watersheds approved under the Watershed Protection and Flood Prevention Act of 1954. National forest lands were involved in 17 of these watersheds. Improvements started on the Mill Canyon-Sage Flat watershed project in Utah, authorized by Congress for an action program in 1956. The Forest Service and State foresters will participate in 12 other authorized projects.

In the Hope-Anderson watershed protection demonstration program, the Forest Service carried out flood-prevention measures on 8 projects involving national forest lands and assisted State forestry agencies on 37 additional projects.

The Service participated with the Soil Conservation Service in flood-prevention work on six large watershed projects authorized by the Flood Control Act of 1944—the Los Angeles, Santa Ynez, Little Tallahatchie-Yazoo, Potomac, Buffalo Creek, and Coosa watersheds. Work on most of these projects has been

in progress for nearly 12 years, with some significant results now apparent.

Five watersheds received emergency treatment under authority of the Flood Control Act in fiscal year 1956. Four of these were fire-impaired watersheds in southern California; the fifth was in Wyoming. Areas treated were in steep mountainous country and were potential sources of serious flood and debris damage to downstream industrial, agricultural, and residential developments. Emergency treatment included aerial seeding of 68,400 acres of burned-over land to quick-growing grasses or mustard, stabilizing 16 miles of eroding fire-control lanes and trails, and clearing 47 miles of clogged channels. About one-third of the cost of these emergency projects was borne by local interests.

Forest Research

Each year the research work of the Forest Service produces new knowledge and techniques which help to improve the management of forest lands and the utilization of forest products. Thus it brings increased returns to forest owners. The research program is carried on at Beltsville, at nine regional forest and range experiment stations, a research center in Alaska, a tropical forest research center in Puerto Rico, and at a national Forest Products Laboratory in Madison, Wis. Under each of the regional experiment stations, several research centers work on problems related to particular forest types.

The Forest Survey covered an additional 41 million acres of forest lands in 1956, including 12 million acres initially inventoried in 14 States, and resurveys of 29 million acres in 10 States. The survey has now covered, at least once, a total of 510 million acres—77 percent of the total United States forest area and more than 90 percent of the country's commercial forest land.

"Skyfire," the Forest Service's cooperative project for the study of lightning storms, received substantial support from the Advisory Committee on Weather Control. This included an advance of funds to convert a Weather Bureau radar into a mobile field unit for analyzing clouds and making exploratory tests of the effects of cloud seeding on the lightning potential of storm clouds.

The Service had an active part in the Committee on Fire Research and the Fire Research Conference, organized last year under auspices of the National Academy of Sciences and the National Research Council. These groups met in June 1956 to consider means of bringing the skills of the country's scientists to bear on forest fire and other fire problems.

In research on forest diseases, additional evidence was obtained that genetic resistance to the chestnut blight is present in a few old American chestnut trees that have survived repeated attacks by the fungus. Genetic resistance of selected ponderosa pines to the western gall rust also was indicated. In the Southeast, research indicated that individual healthy trees may be genetically resistant to littleleaf, one of the most serious diseases of shortleaf pine.

Two hitherto unknown diseases were discovered. One is causing killing of red, black, and scarlet oaks in the Northeast; the other is killing white pine in the Southeast. Research to determine the causes and to develop control procedures is underway.

Ethylene dibromide emulsion sprays were proved effective in control of the Douglas-fir beetle. The emulsion sprays are less costly than oil-base sprays. Malathion proved

an effective insecticide for control of the black pine leaf scale in southern California.

Selective removal of high-risk trees from pine forests in southern California was found an effective method for control of bark beetles. Tree mortality in areas cut by this "sanitation-salvage" method was reduced as much as 95 percent, compared with areas not benefited by the selective logging treatment.

An analysis of windthrow (uprooting by wind) on the edges of patch cuttings in the Douglas-fir forests of Oregon indicated patterns by which loggers can avoid excessive losses. Research in Louisiana showed that with the use of a bird repellent, direct seeding of southern pines can be successful. Birds eating the seeds have usually nullified previous direct seeding efforts. In the southern Appalachians, pruning of white pine proved to be profitable. Experimental pruning yielded profits of $11 to $13 per tree, or $57 to $63 per thousand board-feet.

Two major projects in forest genetics were started during the year: A study of the races of eastern white pine, in which four Forest Service experiment stations and a research unit in Canada are participating; and a study of the races of ponderosa pine by the western forest experiment stations.

In watershed management research, a method has been developed for predicting soil moisture under a wide variety of conditions over large areas in the United States, Alaska, and Puerto Rico. Changes in soil moisture in the top 6 inches of soil can be predicted with a high degree of accuracy. This accomplishment resulted from cooperative research by the Forest Service and the Waterways Experiment Station of the Corps of Engineers.

The Forest Products Laboratory made progress in the development of the cold-soda pulping process. This process is expected to produce yields of pulp approaching 95 percent, as compared with conventional chemical pulping yields of 45 percent and semichemical yields of 85 percent.

As a result of studies of quality standards for wood members of box containers, conducted by the Forest Service in cooperation with the Army Engineer Research and Development Laboratories, a guide for purchase of container woods was prepared. Results of this work should greatly reduce lumber procurement costs for the military services, as well as improve the performance of containers.

More than 3,500 consulting visitors brought their problems to the Forest Products Laboratory during the year. A large number of the laboratory's projects were conducted on a cooperative basis.

Private industry invested 24 percent more money in laboratory research projects than it did in the preceding year.

Timber Resource Review

The Timber Resource Review, a comprehensive appraisal of the Nation's timber resource, was conducted from 1952 to 1955 by the Forest Service with the collaboration of State conservation or forestry departments, the forest industries and others. A review draft of the report of this study was released by the Forest Service in October 1955. Several thousand comments on this preliminary report were received and evaluated during 1956. Preparation of the final report with careful consideration of these comments was begun during the year.

MARKETING AND FOREIGN AGRICULTURE

AGRICULTURAL MARKETING SERVICE

Food Distribution Programs

Food distribution activities continued to expand in fiscal year 1956. Through the direct distribution program more than 2 billion pounds of foods that had been acquired by the Department were moved into consumption in this country and abroad. This was almost twice as much as in the previous year. The gain was principally due to the liberalized donation authority contained in Public Law 480 and the Agricultural Act of 1956. The direct distribution program was notably successful in moving into consumption in this country some 150 million pounds of pork products.

A family in Milwaukee, including father, mother, and seven children, had been living on $57 a week. Three years ago, the mother and several of the children were tuberculosis suspects—pale, tired, and frequently ill. At least one member of the family had to visit a free medical clinic almost every week. For the past 3 years they have received Federal surplus foods to help tide them over: butter, cheese, dry skim milk, pork, beans, rice, flour, lard and shortening. The health of all the family has improved tremendously. Fear of tuberculosis has disappeared. No member of this family has had to see a doctor for at least a year.

A distributing official says, "As in many other cases, no amount of medical treatment could help until this family's nutritional level was raised. Once they got enough of the right foods their health problems disappeared."

The plentiful foods program also gave substantial assistance to orderly marketing of hogs. In cooperation with the food trades and information media, a sustained merchandising drive was conducted on pork products. Major special plentiful foods programs also were conducted during the year on rice, potatoes, beef, and dairy products. Twenty-eight other special drives were conducted on an area or local basis, giving marketing help to such varied food products as sweetpotatoes, dates, watermelons, and grapefruit.

On June 4, 1956, the national school-lunch program celebrated its 10th anniversary. The number of children eating complete lunches with milk under the program climbed to about 9.7 million—a 10-percent gain over the previous year.

In Cape Girardeau, Mo., the school lunch program provided the foundation for a near revolution in eating habits. In December 1955, a survey showed that few children ate adequate meals except at noon; few of them drank enough, if any, milk; most of the children nibbled between meals. Teachers and health officials launched a widespread program of education in nutrition in the schools, based on the school lunch program. A followup survey in May 1956, showed the number of children eating good breakfasts had jumped from 13 to 43 percent; those eating good suppers, 15 to 43 percent; those eating good lunches increased from 44 to 50 percent; milk consumption almost doubled; between-meal eating fell off from 87 to 76 percent.

In its second year of operation the special milk program operated in more than 62,000 schools, a gain of more than 50 percent over the previous year, and 1.4 billion half-pints of milk were consumed. The program has been so successful that it has been continued for another 2 years, its scope broadened, and the amount of funds available increased

by 50 percent. The program now operates in schools, nursery schools, settlement houses, summer camps, and other nonprofit child-care institutions.

A teacher in Marshall County, Tenn., said of the special milk program at her school:

"The pupils of Cedar Grove each drink 2 bottles of milk per day, and over a period of 5 months have gained from 1 to 10 pounds each, or an average of 3-9/10 pounds per child.

"The health of the children on a whole has been much better and, except for an epidemic of measles, attendance has ranged from 92 to 98 percent each month."

Marketing Agreements and Orders

Thirty-one marketing agreements and orders on fruits and vegetables were in effect in 1956. Products covered by new programs included Florida tomatoes and California dates. Several of the programs were amended to accord with new developments in marketing.

In south Florida, where Marketing Agreement and Order No. 69 regulating the handling of avocados has been in effect since June 1954, commercial growers report the program helped improve the quality of avocados shipped to market.

"The pressure of 'getting on the market first' has been relieved to a considerable extent by the order, which protects the normally early varieties from the glut of the immature midseason or late fruit, which formerly was rushed to market in response to any abnormally high price," reports the manager of the Avocado Administrative Committee, with headquarters at Homestead, Fla.

"Growers have profited volumewise," the manager continued, "since avocados can now be safely allowed to remain on the trees until they have attained their full size, which is a major marketing factor for several of our leading varieties."

The operator of a 70-acre potato farm near Eaton, Colo., said of the potato marketing agreement and order: "It stimulates repeat orders and improves returns to growers by offering only the best of the crop to consumers. This saves containers, freight, and labor on undesirable potatoes."

Another grower, who has a large peach orchard at Palisades, Colo., thinks the marketing agreement and order helps to create new consumer demand because it guarantees quality. "It has helped us build such a reputation for Colorado peaches that consumers know they're going to get their money's worth."

Sixty-six Federal milk marketing orders were in effect in 1956, an increase of eight during the year. These orders help to stabilize prices and supplies by requiring all handlers in a marketing area to pay all producers supplying that market the same minimum prices for milk of similar quality and use, subject to appropriate location adjustments.

On December 29, 1955 the Boston, Mass., Herald editorialized as follows:

"The result of this system is that we are getting enough milk without any unwieldy surplus. New England is nearly self-sufficient in dairy products. We used to import our cream from the West, but last year we had to bring cream in only in July and August.

"Our farmers are not adding to the $7,700 million mountain of CCC-stored commodities. Yet they are making a living, and we are getting plenty of good milk.

"What's wrong with that?"

Regulatory Acts

An intensified program is being conducted under the Packers and Stockyards Act to eliminate unfair, deceptive, and unjustly discriminatory practices which restrain or restrict competition or create monopolies at livestock markets. Many commission firms and dealers engaged in buying and selling stocker-feeder livestock, sows, and sheep were charged during the year with violating the act. Records of persons and firms subject to the act were audited. Livestock scales were inspected and tested at the 66 terminal markets and 286 auction markets posted under the act. At the end of the year, plans were underway for the posting of a large number of additional stockyards.

About 27,000 Perishable Agricultural Commodities Act licenses were in effect at the end of 1956. There was a reduction in the number of complaints of violation of the act, and an increase in the number of cases closed. Amicable settlements of complaints involved nearly $1 million, and reparation awards totaling $300,000 were made in formal proceedings. Fewer instances of misbranding produce were reported than in 1955.

The owner of a produce firm in New York wrote as follows to the United States Department of Agriculture on receipt of a check from a buyer after action was taken under the Perishable Agricultural Commodities Act:

"I want to take this opportunity of complimenting you for the fast, efficient way in which you handled this matter for me.

"I shall highly publicize your agency as one not only with a complete understanding of agricultural, but legal matters as well.

"I trust that I won't need you again—but it is gratifying to know that if I do, I will be in capable hands."

Of the more than 1,100 alleged violations of the Federal Seed Act investigated during the year, more than 700 warnings were issued and 172 cases were cited for hearings. The quantity of seed offered for importation nearly doubled that of a year ago, and the quantity tested under the foreign commerce provisions of the act increased 55 percent.

Market News Service

The expansion and improvement of the Federal-State market news service continued in 1956, providing wider coverage on several commodities.

"Like any good businessman, today's farmer and rancher must know how and when to buy and sell if he expects to keep operating. And the best guide I've found in buying and selling farm products is the market news of the U. S. Department of Agriculture."

So says a farmer near McGregor, Tex., who produces cattle, hogs, sheep, grain, and cotton on his 3,000-acre farm. "Why, I listen to that USDA noonday market news broadcast just as regularly as a stockbroker checks his ticker tape."

An Iowa livestock dealer reports: "For some 50 years we have been buying hogs from north-central Iowa farmers at four concentrating points, shipping to packers in nearly all parts of the United States.

"The market news service at Des Moines and the radio broadcasts over WOI supply us several times daily with invaluable information at both the terminals and interior stations. We have copied their broadcasts for many, many years. We

transmit these to our farmer customers. All of us depend very heavily upon this government service. We just couldn't do without it."

Since the fall of 1955, meatpackers in some areas have been able to subscribe to a special teletype service which brings them official USDA livestock market reports from the major stockyards.

An Ohio meatpacker stated: "We saved enough in our buying on the first day's operation to pay a good part of our monthly subscription fee."

Increased emphasis was placed on the dissemination of cotton market news over radio and television stations.

The year witnessed the most rapid development of egg and poultry market news ever experienced. The trend has been toward reporting market prices and conditions closer to the producer and processor levels of trading rather than at the terminal wholesale markets. New Federal-State market news offices were established during the year at Hartford, Conn., Jacksonville, Fla., and Lincoln, Nebr., primarily for the purpose of reporting poultry and eggs.

Services were further developed and strengthened for reporting prices and market data on grain for local areas, particularly in Arkansas, Louisiana, and Texas. The molasses market news service was transferred to the Grain Division from the Fruit and Vegetable Division in August 1955.

The livestock market reporting service was expanded to cover Lancaster, Pa., Tulsa, Okla., and Fort Smith, Ark., terminal markets; the Visalia, Calif., auction, feedlot and range sales area; the direct hog marketing area of Indiana; and semiweekly wholesale meat reports at North Portland, Oreg. News outlets for livestock and meat market news were also expanded through radio, TV, and newspaper channels. Special teletype systems serve a total of about 130 separate installations, including meatpackers, auction markets, feedlots, order buyers, banks, and other interested groups.

Market news was provided on all tobacco auction markets during the marketing season. Market news releases were made from permanent offices at Raleigh, N. C., and Lexington, Ky., and at nine temporary offices set up at points in the various tobacco-growing belts.

The major improvement made the past year in fruit and vegetable market news was the initiation of a program of expanded reports on the movement of fruits and vegetables by truck. Truck reporters were added to the market news force in Baltimore, Boston, Cleveland, Kansas City, Minneapolis, and St. Louis. Reporting of truck and rail receipts was started at Buffalo, Houston, Indianapolis, Milwaukee, Portland, Oreg., Salt Lake City, and San Antonio, bringing to 32 the number of cities for which truck receipts are now available. New market news offices for fruits and vegetables were established at Louisville, Ky., and Washington, D. C.

Inspection, Grading, and Classing

An east Texas poultry processor says that since he started using the USDA inspection and grading services 6 years ago, his volume of business has doubled. Why?

"Because the homemaker who buys our Government-inspected and graded chickens and turkeys buys with confidence. She knows she's getting a quality meat," says this business owner.

In cooperation with local markets, this processor ran a full-page poultry ad in an area newspaper, stressing U. S. inspected and graded turkeys and chickens.

"With this ad, we tripled our sales within the few weeks that followed," he reported.

"Sure, all poultrymen know the importance of quality in eggs. But it took the extra push of having our eggs judged against uniform standards by an impartial Federal grader that made the difference and helped us find better markets and better prices."

That is how a Liberty, N. Y., family farmer with 3,500 laying hens describes the unique onfarm Federal grading program that in November completed its first year in New York's three top-ranking poultry counties.

Only one other locality in the nation at that time boasted farm-level Federal grading services, since this voluntary program is usually requested at shipping centers and wholesale markets.

A Lake City, S. C., tobacco grower boosts the market news and grading services for tobacco. "The Federal grading of tobacco on a regular grade basis at every warehouse, regardless of location," he says, "affords me the opportunity to have a better knowledge of the quality of my tobacco wherever I choose to sell it. It shows me where my grading at the farm may have been off. The grading service is a good yardstick for comparison of prices by us growers."

Inspection of fresh fruit and vegetable products reached a new record high during fiscal 1956. The number of commodities and areas served by inspectors of raw products for processing continued to increase. This service has become increasingly important in recent years, as the freezing of fruits and vegetables has increased sharply.

The inplant inspection service for processed fruits and vegetables continued to expand—both continuous and plant inspection-pack certification. The volume of continuous inspections increased 16 percent for canned products, 24 percent for dried products, and about 24 percent for frozen fruits and vegetables. In other processed products—chiefly bulk citrus concentrates—inspections were nearly five times those of the previous year.

Federal poultry inspection continues to make rapid progress. Thirty-six new plants inaugurated the service and 125 applications for service are in the process of being approved.

Grading of poultry in ready-to-cook form increased approximately 37 percent. Grading of shell eggs also continued to increase in volume.

Tobacco inspection service was maintained on all of the 176 established auction markets, comprised of 970 different warehouses. All tobacco sold at auction was inspected. Inspectors on a permissive or reimbursable basis were assigned to 81 processing plants. For fiscal 1957, one new market has been added in the flue-cured area—Sylvania, Ga.

The inspection of miscellaneous grain commodities increased approximately 40 percent—much of it due to the volume of inspection requested on flour and corn meal. The total quantity of rice inspected increased approximately 27 percent over last year.

More than 1 billion pounds of butter, and a like amount of cheese, were graded and inspected during fiscal 1956. Dry milk sampled and graded or inspected also totaled more than a billion pounds. Other

gradings by the Dairy Division of AMS included 25 million pounds of evaporated milk, 8 million pounds of sterilized whole milk, 2 million pounds of dry whey, and more than 11 million pounds of miscellaneous dairy products.

The volume of cotton classed by Department employees during the 1955–56 season was the second largest in history. Eighty-one percent of the crop, the largest percentage on record, was classed for farmer-members of cotton improvement groups organized under the Smith-Doxey Act.

The volume of cotton classed under the U. S. Cotton Standards Act was the largest on record—slightly more than 2 million bales.

Standardization

Consumer demand and suggestions from industry resulted in the development of new standards for a number of commodities and the revision of many existing standards.

A new grade, termed "USDA Standard," was proposed and adopted for both carcass beef and slaughter cattle, becoming effective on June 1, 1956.

Revised grade standards for American Egyptian cotton went into effect August 1, and revised cotton linters standards became effective July 1.

Demands for service in standardization of fresh fruits and vegetables continued to increase during the fiscal year. Studies were completed on establishing U. S. Standards for southern peas, beet leaves, and consumer standards for cranberries, and standards will be made effective in the near future. Revisions of eight U. S. Standards for fresh fruit and vegetable became effective.

Research was conducted on development of new and revised standards for canned, frozen, and dried fruits and vegetables, sugar products, fish products, and miscellaneous processed commodities. New standards were issued for five commodities—tangerine juice, plums, dehydrated apples, orange juice, and grapefruit juice. Eleven standards were revised.

New and revised standards of quality for dairy products were developed.

Wider use of Federal inspection and grading services has increased demand for information on standards. More than 12,000 copies of all standards were distributed during the year, including 6,000 copies of the revised U. S. Standards for Cheddar cheese.

Agricultural Estimates

Crop and livestock reporting in the United States is studied as a model by visitors from all parts of the world. It is vital to our economy.

A South Dakota farmer says: "The crop and livestock reports are very helpful to me as they take some of the uncertainty out of farming. I am sorry I farmed for years without them. I think I would be a little further ahead now if I had had them sooner * * *."

"I think a lot of the crop forecasts and summaries I get in return for volunteering the estimates in my neighborhood," remarks a Kansas farmer.

"I got out of hogs and my wife quit raising chickens this year," he says. This farmer is now building a registered Polled Hereford cow herd. Short on hay, he says, "I'll have to buy some, so I'm watching the crop reports for an indication of the best time to buy."

Another farmer uses the crop reports "to buy protein for the 150-odd head of calves I feed every year. I generally buy my protein in June for October delivery. I look at prospects of cotton and the bean crop and buy whatever looks best to me."

The Agricultural Marketing Service provides information on agricultural production and prospective production in time to be useful in the current production or marketing of farm products. Crop and livestock reporting methods are designed to get information quickly from all parts of the Nation, covering hundreds of different products. These reports accurately reflect the direction of change and approximate magnitude of change (year to year and month to month) in acreage, yield, production, livestock numbers, and prices received or paid by farmers.

Since slight deviation in estimates of change from one year to the next can mount up if they continue in the same direction for several years, it is necessary to adjust the estimates every 5 years, after the Bureau of the Census in the Department of Commerce takes its full Census of Agriculture. This process of revision to the new Census base also stimulates the search for refinements in methods that will make the current yearly and monthly estimates more accurate.

In 1956, revisions of estimates for 1949 through 1955, based on the 1954 Census of Agriculture were completed in one of the shortest times on record. Revised estimates of livestock and poultry numbers on farms were published in February 1956; revised estimates for field crops were published in July; and revised estimates for vegetables were scheduled for publication in December.

In June 1956, research to find ways of improving crop and livestock estimating methods was expanded to include the North Central States; and research was continued in the Southern States where it has been in progress for 2 years.

A search is being made, too, for objective ways to forecast yields of cotton, corn, wheat, and soybeans that will improve the forecasts during each season. For cotton, methods have been devised that work reasonably well even when the plants are quite young. But for corn, wheat, and soybeans the procedures now available seem to apply only when the grain on the plants is fairly well developed.

About 13,000 farm operators in some 375 counties throughout the 48 States were visited to obtain information on expenditures for production and family living. Such surveys help to determine what prices should be collected and how they should be weighted together each month for the Parity Index.

A bulletin summarizing United States prices received by farmers was published in June 1956. It includes monthly, season average, and annual average prices for most commodities for which monthly data are prepared.

The advent of the Soil Bank program greatly increased the need for providing assistance and special estimates for use in the administration of various USDA programs. The Commodity Stabilization Service was furnished county estimates and other special data for use in day-to-day operation of the Soil Bank and the allotment and price support programs.

Emphasis was placed on more frequent reporting and broader coverage of reports on various crops such as cattle, hogs, turkeys, hatchery output, and honey production. A special report, made in October 1955, provided an early indication of the 1956 turkey crop. The Milk Production Report was broadened to include supplemental releases on interstate movement of dairy cattle, milk cow numbers, and rations and roughage fed to milk cows.

Marketing Research

Marketing research was expanded in 1956 to cover a still wider range of opportunities for improving efficiency and reducing costs throughout our marketing system. This work embraced research in market development, marketing organization and costs, transportation and facilities, and the biological sciences.

Farm-to-retail price spreads: Much emphasis was placed on the study of price spreads between producer and consumer, and of their component costs. One facet of this work was an overall study of farm-to-retail price spreads for food. The total marketing bill increased from $9 billion in 1940 to $32 billion in 1955. In 1940 consumers spent $14.5 billion for food, and of this amount farmers received $5.5 billion. In 1955 consumers spent $51 billion for food, and farmers received approximately $19 billion. Biggest factors in this increase in the marketing bill were the rising levels of costs of supplies, labor, and transportation used by marketing firms. These accounted for $13 billion of the increase. The additional volume of food handled caused the marketing bill to increase by $4 billion, and the additional services incorporated with food since 1940 added $6 billion to the bill. These findings, together with related material for various separate food groups, have been of broad value to many individuals and groups concerned with the increased size of the marketing bill. Cost and margins reports were issued on beef, pork, bread, and a number of other food groups during the year.

Changes in fluid milk distribution: Marketing researchers studied changing patterns in fluid milk distribution. They found milk distributors in many parts of the country selling increasing proportions of their milk in half-gallon and gallon containers in place of quarts, in paper containers in place of glass. In nearly all of the markets studied, homogenized milk was rapidly replacing regular milk. The retail route is losing to the wholesale trade in the several market areas studied. Specialized dairy stores, as well as supermarkets, have increased store sales.

New elevator for potatoes: **A new elevator, designed by ARS researchers, for moving potatoes from the lower to the upper floor of potato storage and packing plants has been installed successfully in a number of commercial potato storage and packing houses. In one plant, this elevator requires less than half the space used by the previous equipment. It is useful in regulating the flow of potatoes to the packing line for more efficient use of labor and equipment.**

Handling of frozen foods: Research developed some improved methods of handling frozen foods in wholesale plants and retail stores. Three improved systems of handling frozen foods in wholesale plants were developed and tested. Handling costs were reduced from 15 to 28 percent. Improved methods of receiving, price marking, and displaying frozen food, as well as improved equipment, resulted in labor productivity increases of as much as 44 percent in retail stores.

New shipping containers: New shipping containers for fresh western plums should permit substantial reductions in marketing costs. The new containers—fiberboard boxes—are cheaper than the standard four-basket crate now in general use. Although plum packing costs vary from year to year, estimated potential savings, based on packing and shipping tests in 1954, ranged from

19 to 30 cents a crate depending upon the type and design of the container used. If these containers were generally adopted by the industry the saving would total $1 million a year.

Aeration and fumigation of grain: AMS continued its research on mechanical aeration of grain. A number of tests were conducted on distributing fumigants through the systems.

Aeration has helped one Texas grain elevator operator solve some of his storage problems. He used to turn his grain—move it from bin to bin—to condition it. To do this, he had to keep one of his five steel storage tanks empty. He installed an aeration system with the help of an AMS engineer. Now, he no longer turns his grain, and he has room for another 26,000 bushels of sorghum. The system paid for itself in less than a year.

In the work on use of aeration systems to fumigate grain, it became evident that return ducts necessary to convert aeration systems for recirculation, were in some cases too costly. In other cases the storage structure was too loose to permit recirculating the fumigant. "Forced distribution" was initiated to eliminate these problems. In this method the usual direction of the blower is reversed so the airflow is upward. Volatile fumigants, such as methyl bromide, can be effectively distributed this way throughout the grain with very little wastage.

Experiments in retail merchandising: Merchandising experiments were conducted in retail stores with interesting results. Four alternative methods of displaying natural Cheddar cheese were compared. The largest volume of sales resulted when the cheese was displayed in two forms: cheese prepackaged in consumer packages before shipment to the stores and cheese packaged in the stores; and in 5 weight ranges varying from about 6 ounces up to 2 pounds. Sales of 19-ounce No. 2 can cherries were greater than sales of the 17-ounce No. 303 can. The method by which the most carrots were sold was the combination display of 1- and 2-pound polyethylene bags. None of the banana merchandising methods tested were significantly different from the others in terms of quantity sold.

Savings in loading watermelons: More than one-half million dollars a year can be saved by loading long-type watermelons crosswise in railroad cars. Researchers found that external bruising and cracking of melons during rail shipment could be reduced more than 70 percent. There were no significant differences in the rates of internal damage to the flesh of the melons loaded crosswise in the car as compared with those loaded lengthwise. Lengthwise loading is the conventional method.

Reducing shipping costs: Researchers found that shippers of prepackaged carrots from the Rio Grande Valley in Texas could save from $100 to $145 a carload by using lower cost containers under suitable conditions. And additional savings in freight and refrigeration charges also appear possible.

Methods of insect control: Researchers found a better way to control the cigarette beetle. This insect does several million dollars' damage in tobacco warehouses each year. Studies showed that the best time by far to control the insect is between 6 p. m. and midnight. The usual industry practice has been to spray during the regular 7 a. m. to 4 p. m. workday.

Improvements in merchandising: Marketing research has been testing various methods of selling more fresh produce in stores. In some of these tests, variety proved be a valuable merchandising principle. A combination display of bagged and bulk apples, priced in 5-pound units, increased apple sales 75 percent. Sales increased still further when the bagged apples were offered in varying weights.

Storing and handling peanuts: AMS research findings related to storing and handling farmers' stock peanuts can result in an annual saving of $500,000. Besides this saving, better peanuts would reach the market.

Shipping tests for citrus fruit: Overseas shipping tests in Florida and California citrus fruits showed there would be less spoilage and a better quality product could be marketed in Europe if higher than average quality fruit were packed. Better refrigeration before loading and during transit also helped maintain fruit quality. With proper precooling the ship's refrigerator equipment can maintain the fruit at the desired temperature.

Lighting as factor in color evaluation: Research was undertaken to ascertain whether or not a source of artificial light was equal to or better than natural light for judging color, one of the most important color factors in evaluating the quality of canned tomato juice. The results showed that artificial illumination can be substituted and it should increase the accuracy of the color judgment of the inspectors by eliminating the use of uncertain and constantly changing natural daylight.

New method to determine oil content of cottonseed: A rapid, inexpensive, and simple electronic method of determining the oil content of cottonseed was developed by marketing research. The new method obtains accurate results in 10 minutes, and the instruments used require no special skill to operate.

Studies of spoilage bacteria and fungi: Studies of the effect of gamma ray treatments on bacteria and fungi that cause spoilage of fruits and vegetables during marketing, showed that the various micro-organisms react differently to irradiation treatments. The information obtained in these tests will be useful in developing practical application of atomic irradiation for the preservation of fresh food supplies.

Federal-State Matched Funds Projects

During 1956 matched fund marketing service work was carried on in 38 States and 3 Territories. This Federal-State cooperation is designed to help marketing agencies improve marketing practices and use the findings of marketing research. Under this program work is done in four general fields: (1) Maintaining and improving the quality of agricultural products, (2) expanding outlets for agricultural commodities, (3) holding down marketing costs through improvements in facilities and handling methods, and (4) assembling and disseminating marketing information. The Agricultural Marketing Service helps the States plan and carry out these projects.

Twenty-five States and Territories conducted quality improvement programs for fruits and vegetables, 19 for poultry and eggs, 13 for dairy products, 12 for livestock and meats, and 9 for grain and seed. Others worked on quality maintenance for cotton, tobacco, and other products.

In 21 States and Territories marketing agencies were assisted in improving their facilities and in introducing more efficient handling equipment and methods to hold down the costs of marketing.

Activities in assembling and disseminating marketing information were carried on by 29 States on practically all agricultural commodities produced on a commercial scale in these States.

The following are specific examples of accomplishments in each of the four general areas of matched fund marketing service work.

The quality of butter produced in Wisconsin has shown steady improvement since the initiation of a quality improvement program with the butter industry 5 years ago. The percentage of butter produced grading Wisconsin Grade A or AA increased from 41 percent in 1951 to nearly 59 percent in 1955. Over the same period, the percentage of Wisconsin undergrade decreased from 37 to 7.1 percent. This improvement in quality is estimated to have resulted in about $200,000 of additional income annually to the Wisconsin butter industry.

During the fall of 1955, West Virginia established and operated a clearinghouse service to assist apple growers in finding fresh fruit outlets for about 750,000 bushels of apples. These apples could not otherwise have been moved except to processors at extremely low prices. About 375 buyers used this service, some as many as 25 times during the season. The program reduced the time and travel necessary for buying operations, speeded up the movement to market, and reduced marketing cost. It brought additional income to growers estimated at $300,000 on the 750,000 bushels that moved through this program. By stimulating competition it raised the average price received for the total apple crop of about 4.3 million bushels by at least 30 cents per bushel.

North Carolina stepped up its program of providing help to farmers and grain dealers in meeting a shortage of adequate grain drying and storage facilities. Technical assistance was provided to 12 grain operators in planning new storage facilities with the result that modern storage capacity of nearly 700,000 bushels was added. The expansion and improvement of grain drying and storage facilities since the program started has resulted in an estimated price increase to the producer of 5 to 20 cents a bushel—a total gain of over $1 million annually. The conversion of elevators to accommodate bulk handling methods is estimated to have brought additional income to producers of about 5 cents per bushel on corn and 10 cents per bushel on soybeans.

Experimental market news reports issued by Indiana and Ohio covering prices paid for hogs at interior markets are providing hog producers in those States with valuable information in selecting the most advantageous market point. The program in Indiana, covering 61 local markets which handle between 3 and 4 million hogs per year, provides price information on over 50 percent of the hogs marketed in Indiana which bypass the terminal markets. Ohio reports receipts and prices paid for the various grades of hogs at 60 local marketing points. Florida initiated a project under which data on weekly plantings of tomatoes by areas are collected and disseminated. This information is expected to be extremely helpful to growers and marketing agencies in planning their marketing programs.

COMMODITY EXCHANGE AUTHORITY

The Commodity Exchange Authority of the Department administers the Commodity Exchange Act, the purpose of which is to prevent price manipulation, cheating, and fraud, and other unlawful practices in the commodity futures markets.

Futures trading, when free from unfair practices, performs useful services for agriculture. The daily changing forces of supply and demand, and the buying and selling orders brought together in futures markets, are there shaped by the forces of competition into a central price picture for all to see. In grains and cotton, public confidence in competitive prices is such that futures quotations are used regularly over the United States as "base prices" in the buying and selling of actual grain and cotton.

Merchandisers, processors, and the larger farmer cooperatives use the futures markets for "hedging" against price risks—balancing inventories and requirements in actual commodities against offsetting sales or purchases in futures. As grain and cotton move into merchandising and processing channels after harvest, hedging in the futures markets against price risks is normally so extensive that total futures-market holdings, known as "open contracts," tend to rise and fall seasonally with stocks in commerical channels.

The pricing and hedging services of futures markets are called into question, however, if the trading of any individual or group is permitted to move the price artificially to the disadvantage of those engaged in the production, merchadising, and distribution of basic crops. To the extent that it impairs public confidence in the value of open markets and the validity of competitive prices, price manipulation hurts everyone.

In most instances the day-by-day surveillance of futures trading by the Commodity Exchange Authority, and its investigations of complaints and questionable market situations do not show that the law has been violated. Some of the daily checks and special investigations reveal minor infractions, which are remedied quickly upon appropriate reminders or formal warnings. Those who knowingly and persistently flout the law are few. Their operations, however, may be of substantial magnitude.

In the past 4 years manipulative operations in the futures markets for wheat, oats, soybeans, cotton, eggs, potatoes, and onions were made the subject of formal administrative proceedings by the Department. In this period 17 complaints under the Commodity Exchange Act charging price manipulation or other wrongful practices were concluded in semijudicial proceedings in the Department or in proceedings before the Federal courts. In one of these cases the respondent died before completion of the proceedings. In another, the CEA moved for dismissal of the complaint when testimony by a Government witness did not agree with information he had previously furnished. In the other 15 cases, the charges based on CEA investigations were sustained and sanctions imposed.

FOREIGN AGRICULTURAL SERVICE

The Department's export promotion program, administered by the Foreign Agricultural Service, passed an important milestone in fiscal 1956.

The quantity of United States farm products exported reached a postwar record high and was the largest in 30 years. Our exports surpassed not only those of the World War II recovery years when huge amounts of United States farm products were donated as foreign aid, but also the quantity exported in the big Korean "scare" buying year of 1952.

Contributions made by the Foreign Agricultural Service toward this "export success story" include:

1. Administering title I of Public Law 480, under which 37 agreements were entered into with 25 foreign countries during the fiscal year for the sale for foreign currency of $1,018 million worth (CCC cost) of United States farm products.

2. Initiating many foreign market development agreements with cooperating United States agricultural trade groups, producer organizations, and land-grant colleges.

3. Intensified reporting to American agriculture and the public on foreign agricultural developments affecting United States farm exports. This service is based on the reports from 86 agricultural attachés stationed at 56 posts and covering 107 countries and areas.

4. Continuing effort to get foreign countries to relax barriers against imports of United States farm products, both through the direct approach and the multilateral approach of GATT (General Agreement on Tariffs and Trade) and other international organizations.

Agricultural exports in fiscal 1956 were valued at $3,493 million, compared with $3,145 million the previous year, and $2,936 million in 1954. In quantity, United States farm exports in 1956 were 17 percent higher than in fiscal 1955, and 30 percent higher than in 1954.

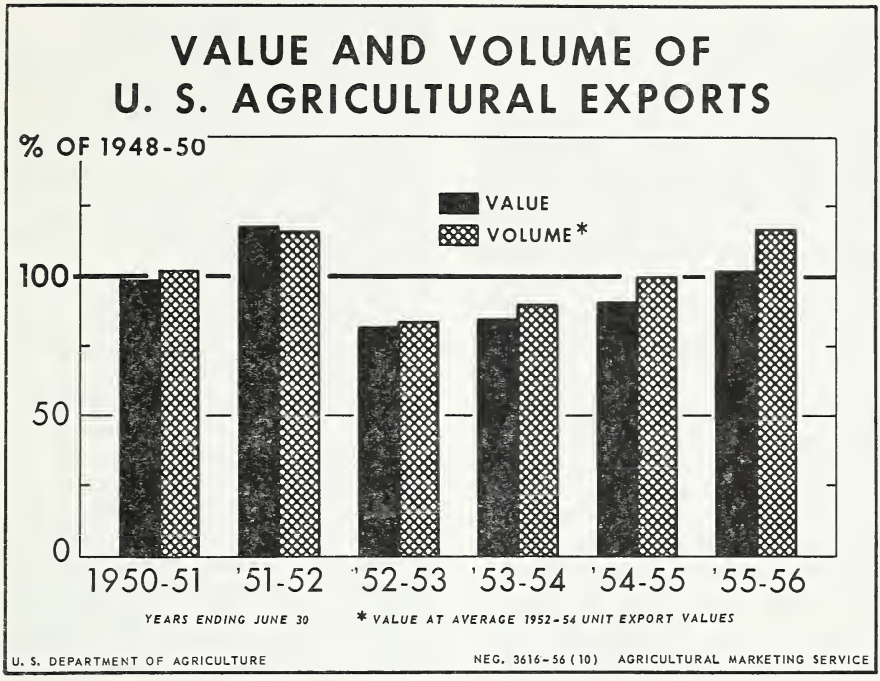
Exports of feed grains, soybeans, soybean and cottonseed oils, tallow, hides and skins, oranges, and grapes reached new peaks. Other commodities of which exports were higher than in recent years included lard, tobacco, wheat and wheat flour, protein meals, rye, canned fruit, fresh apples, butter, beef, cotton linters, and nonfat dry milk.

The activity authorized by title I of Public Law 480 (Agricultural Trade Development and Assistance Act) is of course a temporary device for reducing our heavy surpluses. All sales for export are made through private trade channels. Our long-range objective is for exports of farm commodities to move freely without the aid of large-scale Government financing.

As our total farm exports have increased, so has our share of world exports for several important commodities. Following is the United States share of world exports for the calendar year 1955:

Cottonseed and oil, 80 percent; lard and tallow, 75 percent; soybeans and oil, 67 percent; grain sorghums, 93 percent; corn, 48 percent; cotton, 22 percent; tobacco, 39 percent; powdered milk, 57 percent; and wheat and flour, 32 percent. Cotton was the only commodity that fell below the previous year. Under the new CCC cotton-pricing program our exports of this important corp improved in calendar year 1956.

As the Government agency primarily responsible for expanding export markets for our farm products, the Foreign Agricultural Service is guided by a clear-cut purpose: To help the United States


VALUE AND VOLUME OF
U. S. AGRICULTURAL EXPORTS
% OF 1948-50
VALUE
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100
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1950-51
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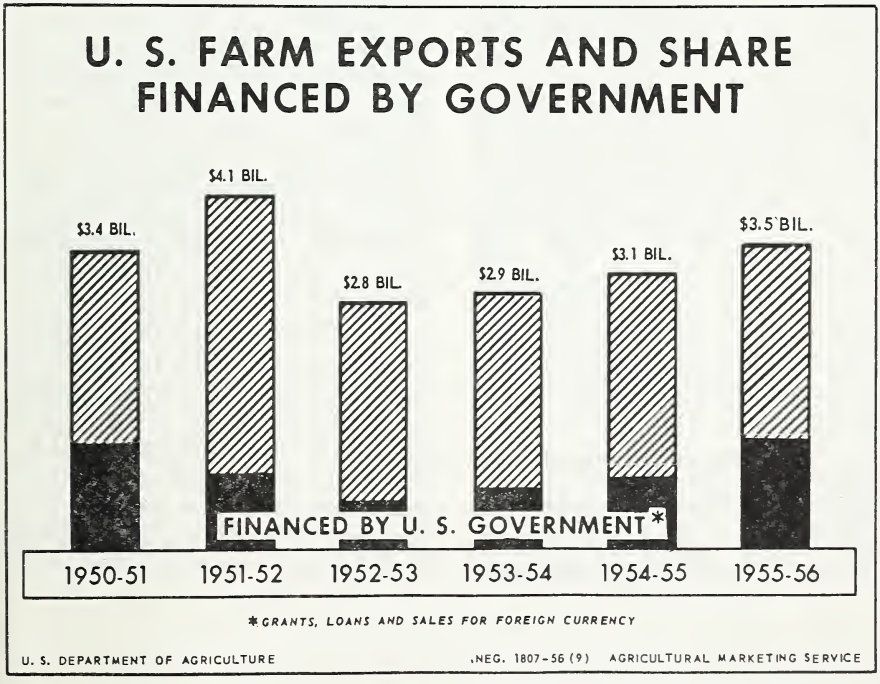
YEARS ENDING JUNE 30
* VALUE AT AVERAGE 1952-54 UNIT EXPORT VALUES
U. S. DEPARTMENT OF AGRICULTURE
NEG. 3616-56 (10) AGRICULTURAL MARKETING SERVICE


U. S. FARM EXPORTS AND SHARE
FINANCED BY GOVERNMENT
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$3.5 BIL.
FINANCED BY U. S. GOVERNMENT*
1950-51
1951-52
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1954-55
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*GRANTS, LOANS AND SALES FOR FOREIGN CURRENCY
U. S. DEPARTMENT OF AGRICULTURE
NEG. 1807-56 (9) AGRICULTURAL MARKETING SERVICE

agricultural industry build a flourishing export business, based on competitive quality and price and on sales for dollars.

FAS actively promotes commercial exports of farm commodities for dollar exchange. The agricultural attachés, marketing specialists, country analysts, and FAS representatives are continually trying to open up new outlets for farm products. They work toward greater liberalization on dollar purchases; seek reductions of trade barriers; report marketing opportunities; promote high-quality export standards for farm products; develop and carry out market-promotion plans; and help United States trade groups and farm groups take the best possible advantage of export opportunities.

A small percentage (about 1.4 percent) of the foreign currencies derived from sales under title I of Public Law 480 is being used by Foreign Agricultural Service to develop new and expanded foreign markets for agricultural commodities. About $20 million has been earmarked for market development purposes in 25 countries. In fiscal 1956, $1,482,733 was obligated in nine countries for this purpose.

The Department is encouraging to the maximum extent cooperative participation of farm and trade groups and other interested organizations in market development work. The following 17 such groups and organizations participated in export promotion programs:

Leaf Tobacco Exporters Association, Inc.
Tobacco Associates, Inc.
Burley and Dark Leaf Tobacco Exporters Association
National Dairy Council
Dairy Industries Society, International
Oregon Wheat Growers' League
Millers' National Federation
National Renderers' Association
Institute of American Poultry Industries
American Soybean Association
Soybean Council of America
Nebraska State Department of Agriculture
U. S. Rice Export Development Association, Inc.
National Association of Food Chains
Holstein-Friesian Association of America
University of Kentucky
University of Tennessee

Market development work varies widely in scope. It includes promotion and expanded foreign use of United States farm products through market surveys, advertising, research, nutrition education, trade fairs, and the establishment of cooperative activities among commodity interests in the United States and foreign countries. Key persons in commodity fields study handling, processing, and marketing of the commodity in the United States and foreign countries as a means of encouraging sale of United States farm products.

Exhibits at international trade fairs acquainted foreign buyers and consumers with United States farm commodities and products made from them. The United States participated in six fairs during the year: in Cologne, Germany; Bogota, Colombia; Ciudad Trujillo, Dominican Republic; Osaka, Japan; Barcelona, Spain; and Rome, Italy.

The Foreign Agricultural Service strengthened and expanded its agricultural attaché program last year. Our 86 attachés, stationed at 56 posts, are the major source of information on foreign agricultural developments. This information, promptly relayed to Washington, is analyzed, interpreted, and made

available to the agricultural industry through publications, the farm press, and radio and television outlets.

Our attachés are constantly in touch with local situations, particularly those that affect trade in United States farm products. They report on crop and livestock production, weather damage, trade with other countries, prices and availability of world farm commodities, and agricultural trade and policies. The Department uses this information in preparing statements on the agricultural situation abroad.

Attachés, however, are more than reporters. They continually represent the United States in their respective countries. Their negotiations with foreign governments in fiscal 1956 resulted in further trade liberalization on many United States farm crops and products.

Studies of competitive production and marketing of agricultural products by foreign countries were a major FAS activity in fiscal 1956. These studies give the United States a better insight on how and where to seek and maintain markets for farm products. A comprehensive report on foreign competition was issued during the year. These studies will be continued in 1957.

This work shows that cotton production is expanding in many foreign areas. Canada is becoming a competitor in the sale of fats and oils. Tree nut production is increasing in the Mediterranean area. Competition in tobacco sales is increasing. The Dutch market for United States farm products remains strong. Agriculture in the Middle East is expanding. We face continued competition from South African citrus in other foreign markets.

The FAS represents the United States at international meetings. Thus, the agency represented the Department at the 10th session of GATT at Geneva, Switzerland. After the GATT discussions, Norway announced removal of restrictions on several kinds of fruits. Austria liberalized imports on lemons, limes, and unsweetened fruit and berry juices. Germany agreed to move ahead on trade liberalization.

In later sessions with the 21 GATT member countries, the United States received tariff concessions on items with a trade value of nearly $400 million. Of this amount, almost $99 million consisted of direct concessions on agricultural products that the United States exports.

The Foreign Agricultural Service cooperated with the International Cooperation Administration in aiding more than 2,000 foreign visitors from 91 countries who arrived in the United States during the year. Some were agricultural leaders, including persons of ministerial rank, who came to study agriculture and programs, hoping to develop or improve similar activities in their own countries. Others were students seeking technical skills in agriculture and home economics.

The information service of FAS was expanded and strengthened. Its magazine, Foreign Agriculture, was revised editorially to better report and interpret world agricultural developments as they influence our agricultural trade. The agency is making a documentary motion picture on United States agricultural exports.

AGRICULTURAL STABILIZATION

COMMODITY STABILIZATION SERVICE

"The price support program added over $500 to returns from my 1955 crop of soybeans," an Illinois farmer said recently. He explained it this way:

"Up to last year I always sold my soybeans at harvest time. I'm a systematic sort of fellow and that seemed the right way to do it—produce a crop, harvest it, sell it, put the money in the bank. Only one thing was wrong with my system: I wasn't putting as much in the bank, most years, as some of my neighbors were—the ones who stored their soybeans in the fall for sale the following spring.

"Last year I decided that, instead of selling my 1,600-bushel soybean crop at harvest time, I would take out a Commodity Credit Corporation price support loan. I'm glad I made that decision. If I had sold in September 1955, I would have got only $3,327 for my beans; by selling in March 1956, after prices had strengthened, I netted $3,855. The price support program, by providing me price insurance during the loan period, encouraged me to hold my soybeans for a higher price. I feel that the program put in my pocket the difference between $3,855 and $3,327—or $528."

Thousands of other farmers used the price-support program in 1956 as a protection against the effects of wide price fluctuations. The volume of support extended on 1955 crops, through June 30, 1956, amounted to $3,519,000,000, as compared with $2,942,900,000 on 1954 crops.

Funds of CCC "tied up" in price support at the end of June 1956 amounted to $8,257,308,000—consisting of $2,285,185,000 in loans outstanding, and $5,972,128,000 in inventories, on the basis of cost value. Funds in loans and inventories on June 30, 1955, totaled $7,069,277,000.

Three commodities accounted for the bulk of the June 30 loan total: Upland cotton, 6.1 million bales, $978 million; corn, almost 423 million bushels, $654 million; and tobacco, over 867 million pounds, $528 million. Other commodities on which CCC had made loans were wheat, extra-long staple cotton, honey, soybeans, barley, dry edible beans, flaxseed, grain sorghums, oats, rice, rye, and peanuts.

Among the large commodity holdings on June 30 were wheat, 951 million bushels, valued at $2,536 million; upland cotton, 6.8 million bales, $1,250 million; and corn, 702 million bushels, $1,246 million. Other commodities in inventory included butter, cheese, nonfat dry milk, rice, rye, oats, barley, grain sorghums, flaxseed, soybeans, peanuts, dry edible beans, field seeds, extra-long staple cotton, cotton linters, cottonseed oil, butter oil, linseed oil, tung oil, turpentine, rosin, and wool. Also in inventory were certain strategic materials acquired through barter of surplus farm commodities.

National average support prices in effect for 1955 crops (or production during specified periods) were as follows:

BASIC COMMODITIES—Wheat, $2.08 per bushel; corn, $1.58 per bushel; upland cotton, 31.70 cents per pound; extra-long staple cotton, 55.20 cents per pound; peanuts, 12.24 cents per pound; rice, $4.66 per hundredweight; and various types of tobacco, in cents per pound, as follows: Flue-cured, 48.3; fire-cured, 34.6; burley, 46.2; Virginia sun-cured, 30.8; cigar filler and binder, 38.9; dark air-cured, 30.8; and Puerto Rican, 31.9.

DESIGNATED NONBASIC COMMODITIES: Butterfat, 56.2 cents per pound; manufacturing milk, $3.15

per hundredweight; wool, 62.0 cents per pound; mohair, 70.0 cents per pound; extracted honey, 9.9 cents per pound; and tung nuts, $51.06 per ton.

"PERMISSIVE" COMMODITIES: Barley, 94 cents per bushel; dry edible beans, $6.36 per hundredweight; flaxseed, $2.91 per bushel; grain sorghums, $1.78 per hundredweight; oats, 61 cents per bushel; rye, $1.18 per bushel; soybeans, $2.04 per bushel; cottonseed, $46.34 per ton; and crude pine gum, $27.45 per standard barrel, net basis.

Net realized program losses sustained by the CCC in its nonrecourse loan, purchase, and payment programs totaled $974,767,000 in the fiscal year 1956, as compared with losses of $799,061,000 in the fiscal year 1955.

Commodities having a cost value of $2,723 million were disposed of during the year, as compared with disposals of commodities worth $2,115 million in the fiscal year 1955. The 1956 total was accounted for by the Commodity Credit Corporation as follows: Direct donations, $406 million; loss on sales, $521 million; recovered through domestic and export sales for dollars, $916 million; recovered from sales to other United States Government agencies and international organizations, $150 million; reimbursable from sale of foreign currencies and from appropriations for Titles I and II, Public Law 480, 83d Congress, $431 million; and value of strategic materials received through barter, $299 million.

A comprehensive storage-facilities program was continued during the year. At the end of June 1956, CCC owned bins having an aggregate storage capacity of 894 million bushels. Plans were moving forward for the purchase of additional bins which, when erected, would bring CCC's owned bin capacity to 993 million bushels. Space covered by outstanding guarantee and occupancy agreements totaled nearly 181 million bushels. CCC also had 77 million bushels of wheat stored in ships of the Maritime Reserve fleet. Loans made and commitments outstanding for construction of farm storage facilities totaled $82 million for a capacity of 289 million bushels from inception of the program in 1949 through June 1956. The increase in capacity during the fiscal year 1956 totaled 25 million bushels.

The sales quota guaranteed the United States for the 1955–56 International Wheat Agreement "year" was 196,523,000 bushels of wheat or wheat equivalent in the form of flour. Actual sales recorded against this quota through June 30, 1956, totaled 129,359,000 bushels.

Export payments were made to commercial exporters on shipments pursuant to sales, some of which were made during the year ended July 31, 1955, and others during the 1955–56 year. These payments amounted to $75,462,808 on 104,394,287 bushels of wheat and equivalent. In addition, CCC provided 18,955,843 bushels of wheat and equivalent from its own stocks, on which the Agreement differentials totaled $14,217,148. Total differentials amounted to $89,679,956 on 123,350,130 bushels—an average of 72.7 cents per bushel.

The Commodity Credit Corporation is authorized by statute to borrow money as needed for operations. This statutory authorization was increased from $12 billion to $14.5 billion by Public Law 864, 84th Congress, approved August 1, 1956.

Heavy production made continued "adjustment" operations necessary for the basic commodities. Acreage allotments for 1956 crops were established as follows: Corn in the commercial area, 43,281,000 acres (later replaced by a "corn base

acreage" of 51 million acres under the Soil Bank); wheat, 55 million acres (excluding the minor wheat-producing States of Alabama, Arizona, Connecticut, Florida, Louisiana, Maine, Massachusetts, Mississippi, Nevada, New Hampshire, Rhode Island, and Vermont); rice, 1,639,000 acres; peanuts, 1,650,000 acres; upland cotton, 17,391,000 acres; extra-long staple cotton, 45,000 acres; and tobacco, 1,364,000 acres. With the exception of corn, marketing quotas were in effect in conjunction with the acreage allotments.

The Soil Bank

Title I, Agricultural Act of 1956 (also cited as the Soil Bank Act), became effective May 28 "to assist farmers to divert a portion of their cropland from the production of excessive supplies of agricultural commodities, and to carry out a program of soil, water, forest, and wildlife conservation."

The Soil Bank program established under the new legislation has two parts: (1) the acreage reserve, and (2) the conservation reserve.

Objective of the acreage reserve is to reduce production of the basic crops—wheat, cotton, corn, tobacco, peanuts, and rice—by reducing acreages below established allotments, or base acreages in the case of corn. Farmers with acreage allotments for these crops may agree to cut their acreages below established allotments, or corn base acreages. In return, they receive payments to compensate for loss of income from the land that is put into the acreage reserve. There are top limits on the acreage that may be designated for the reserve. Land put into the acreage reserve may not be cropped, nor may it be grazed, except when authorized by the Secretary of Agriculture in emergencies.

All farmers are eligible to take part in the conservation reserve by shifting general cropland into the reserve and putting it to conservation use. There are two types of payments: (1) A "one-time" payment in cash, or in conservation materials and services, for carrying out a conservation practice on "set-aside" acreage; and (2) an annual cash payment for the period of the reserve contract: Contracts run for 3, 5, or 10 years if the land is already in an approved cover crop; for 5 or 10 years if cover must be established; for 10 years if trees are to be planted. Farmers may plant the conservation reserve acreage to approved grasses, legumes, or trees, or devote it to soil, water, forest, or wildlife conservation practices. They may not harvest a crop from the reserved acres, or graze them unless authorized in an emergency. To receive any Soil Bank payments, the farmer also must comply with all acreage allotments established for his farm.

The same acreage may not be designated under both the acreage reserve and conservation reserve programs.

Violation of acreage reserve agreements and conservation reserve contracts may result in cancellation and recovery by the Government of payments made, or such lesser penalties as the Secretary of Agriculture may determine. Willful grazing or harvesting a crop from an acreage in violation of agreements or contracts makes the violator subject to a civil penalty equal to 50 percent of the payment, which would have been made for compliance with the contract, in addition to any amounts required to be forfeited or refunded to the Government.

Efforts to keep production in line with demand have been greatly strengthened, of course, by the new

Soil Bank program. Though the late start seriously handicapped the 1956 acreage reserve, more than 12 million acres went to the reserve.

The Soil Bank will be a valuable tool if we guard its integrity. There are those who would make it an outright drought and disaster relief program. Others would use it to effect acreage reductions that should be made without compensation under existing law. We must be vigilant against these tendencies in 1957.

FEDERAL CROP INSURANCE CORPORATION

Even in years of the highest national production, many farmers suffer severe crop failures, and even the best farming areas are not immune. This was illustrated by widespread crop failure in the Nebraska-Iowa end of the Corn Belt, where cornfields of the best and the poorest farmers alike were ruined by hot July winds, following in the wake of severe drought. Farmers with records of consistently high corn yields for many years saw weather hazards leave them with no crop to harvest or sell. It is to cushion the impact of such severe losses on the individual and on the local economy that the Federal Crop Insurance Corporation is working to develop the soundest possible method of insuring farmers against loss of money spent to produce crops.

About $82,000,000 of the $236,500,000, or approximately 35 percent of the funds expended under the 1956 Soil Bank average reserve, was paid in Iowa and Nebraska, chiefly to corn farmers. The widespread destruction of corn crops there and in adjoining corn areas in Kansas, Missouri, and South Dakota brought the 1956 all-risk crop insurance experience into a deficit position. Corn insurance premiums were only $2,728,000 compared to indemnities of $9,348,000.

These heavy corn losses were piled on top of wheat losses resulting from another year of prolonged and expanding drought in the Great Plains area. This drought, spreading from the southern part of the area northward, included some Dakota and Montana counties in its destructive path in 1956. It pushed wheat insurance losses above the premium income—$11,325,000 of premiums compared to $12,334,000 of indemnities paid to wheat farmers whose crops were totally destroyed or severely damaged. Drought was the major factor in the loss ratio of 1.25 for the multiple crop insurance operation, with nearly one-third of the $4,057,000 of multiple crop insurance indemnities paid to Iowa farmers.

Total 1956 premiums of the Corporation were $22,180,000 compared to $28,308,000 of indemnities paid. The three major income programs—wheat, multiple crop, and corn—were the only ones in a deficit position. Crop insurance on barley, dry edible beans, citrus, cotton, flax, soybeans, and tobacco all show premiums exceeding indemnities.

This 1956 experience again emphasizes the need for wider expansion and distribution of the crop insurance business to improve the soundness of the operation. A reasonable volume of business, for example, throughout the entire corn area could have provided premium income sufficient to offset the heavy losses in the corn program. Corn indemnities in Nebraska soared to $5,269,202 compared to the total protection of about $9 million provided on corn crops in that State, while Minnesota, with no really extensive damage in any corn insurance county, paid less than $75,000 of indemnities on $6,700,000 of all-risk corn protection.

Biggest wheat indemnities were paid in Colorado—$3,687,000; Kan-

sas—$2,719,000; South Dakota—$1,838,000; North Dakota—$1,343,000; Montana—$949,000; Oklahoma—$457,000; and Nebraska—$396,000.

Drought-plagued Texas was the only cotton State in which 1956 cotton idemnities exceeded premiums. More than $900,000 were paid to Texas cotton farmers compared to premium income of $735,000, much of which came from irrigated cotton acreage.

Both the actual crop insurance experience and the Soil Bank payments in 1956 emphasize the important function in the agricultural economy that needs to be, and can be, filled through the Federal crop insurance operation.

Crop insurance is an important method of reducing risks in agriculture. We have a long road ahead to make it a self-supporting operation, but we are hopeful that this objective will eventually be reached.

AGRICULTURAL CREDIT

RURAL ELECTRIFICATION ADMINISTRATION

Electric Program

In 1954, Bang's disease destroyed the 20-cow herd of a farmer at Scotland, Ill. The misfortune left him with an empty barn.

This farmer sought to turn adversity to advantage. How could he best use the barn, his know-how, and other farm resources? The answer—thanks largely to electric power available from the REA-financed Edgar Electric Cooperative at Paris—was to remodel the barn and operate a pig hatchery. Electricity heats water for radiant heating pipes embedded in the concrete floor. Electric thermostats maintain even heat on coldest winter days and electric fans provide necessary ventilation all year. This setup means more pigs saved per litter with less labor. Even when the pigs are outdoors, electricity plays a part in their care—electric fencing keeps them confined within 2-acre plots.

As a member of this locally owned and controlled rural electric system, this farmer counts on dependable, low-cost electric service for both home comforts and income-producing farm operations.

More than 4,300,000 consumers in rural America are now receiving central station electric service from rural power systems which have borrowed from the Rural Electrification Administration.

As of June 30, 1956, 94.2 percent of the farms in the United States had this service. Fifty-four percent were served by facilities financed by REA loans. REA's part in bringing electric service to United States farms and ranches is reflected in these cumulative totals since the establishment of the electric program in 1935: Number of borrowers, 1,078; total loans, $3,238,250,759; consumers served, 4,301,705; miles of line energized, 1,372,001.

In fiscal year 1956, REA made electric loans in the amount of $189,804,000. Applications then on hand amounted to $89,724,000, smallest backlog since 1947. The 1956 loans will be used for these purposes: 65.3 percent for construction and improvement of distribution facilities; 32.3 percent for generating plants and transmission lines, and 2.4 percent for consumer financing. The last-named loans enable REA borrowers to lend money to individual consumers for the purchase of wiring and plumbing facilities and electrical appliances and equipment.

Consumers served by REA distribution borrowers used a monthly average of 308 kilowatt-hours during the calendar year 1955, an increase of 8 percent over the previous year. Meanwhile, the average paid per kilowatt-hour by all consumers declined to 2.71 cents; in the previous year it was 2.80 cents per kilowatt-hour. In fiscal 1956, energy sales by REA borrowers, exclusive of sales between borrowers, totaled slightly more than 17 billion kilowatt-hours, an increase of 2½ billion kilowatt-hours over the preceding 12 months.

To help meet the need for more electric power in rural areas, REA loaned $61,251,939 for new generation and transmission facilities, including about 188,000 kilowatts of new generating capacity.

Average cost of wholesale power to borrowers in 1956 was estimated at 7.2 mills per kilowatt-hour, about half of the cost during the early days of the REA program.

Electric borrowers continued to show increasing financial stability and management maturity in fiscal 1956. They paid $36,793,035 in interest charges and $79,867,400 on principal. At the end of the fiscal year, 761 borrowers had a balance with REA of $95,870,361 in advance payments, highest on record. Two electric co-ops paid in full their REA loans. This brought to five the number of cooperatives which have paid off their loans entirely out of operating revenues in advance of the maturity dates. Ten borrowers were in arrears on payments amounting to $332,363.

The 1956 loans will enable borrowers to serve more than 100,000 new consumers, including many who will get power for the first time. During the 12 months, borrowers added 23,932 miles of line, including 3,000 miles of transmission line. This brought total line mileage to 1,372,001, including approximately 32,000 miles of transmission line.

REA cooperated with the national Inter-Industry Farm Electric Utilization Council in promoting effective use of electric power in rural areas. This is a combined effort of REA borrowers, electric companies, manufacturers, distributors, dealers, and many other groups interested in farm electrification. Most States have similar councils that are working to stimulate and expand local level rural use of electric energy.

To help its borrowers keep abreast of developments in sources of power, REA approved a loan to the Rural Cooperative Power Association, Elk River, Minn., to finance the conventional parts of an atomic reactor power system. Two other borrowers have submitted proposals to the Atomic Energy Commission for construction of nuclear plants. Through its engineers and other qualified personnel, REA is keeping in close touch with developments in this field so that rural systems and their consumers may share in any nuclear method that will produce lower cost power.

Telephone Program

Modern telephone service is the magic link between the farmer and his markets and supply sources. Yet in many areas the combination of distance and telephone construction costs precludes service to remote farms and ranches.

REA is attempting breakthroughs on telephone costs at several points. An experiment with buried wire near Girard, Kans., may open the way to cheaper line construction and lower maintenance costs. REA recently signed developmental contracts for dial radiotelephone equipment which may do away with the need for an operator to make connections. Experiments with carrier equipment

indicate that each pair of telephone wires may carry double or triple the number of messages now practicable. REA also encourages use of existing electric utility poles for new telephone lines where savings are assured.

Through such means and close cooperation with all segments of the telephone industry, REA engineers are driving hard to cut construction costs and thus open the way for service to farms once considered out of reach.

During fiscal 1956, REA approved 207 telephone loans amounting to $80,980,000, a substantial increase over the previous year in both the number of loans and the dollar total. Of these loans, 121 were to new borrowers, bringing the total number in the program to 466. The borrowers include 270 commercial companies and 196 cooperatives.

These loans will bring modern dial service to approximately 187,000 rural subscribers, including about 80,000 who will have telephone service for the first time.

Applications for loans on hand in REA at the end of the year amounted to $46,766,000. Additional applications were being prepared by 170 telephone systems, including 121 new applicants, for loans totaling $49,250,000.

Construction was at a record level with 23,052 miles of pole line erected. This is about one-third of the 68,607 miles of pole line completed to date by REA borrowers. At the close of the year, 227 borrowers had placed in service a total of 846 modern dial exchanges.

The telephone borrowers paid $928,991 in interest and $1,199,901 in principal on their loans during the year. Twenty-eight borrowers were in arrears for a total of $553,624.

The 1954 Census of Agriculture showed that 48.8 percent of the Nation's farms had some type of telephone service. A sample survey in July 1955 by the Agriculture Marketing Service indicated that of those farms with telephone service, 51 percent had modern dial service, 18 percent had common battery service, and the remaining 31 percent had magneto service.

All REA telephone loans to date will provide modern service for 695,389 subscribers from 201,524 miles of pole line and the attendant central office equipment.

FARMERS' HOME ADMINISTRATION

W. T., a 31-year-old farmer, owns a 150-acre farm in Wright County, Mo. He is married and has one young son.

He bought the farm, unimproved, about 10 years ago. By 1955 the family had a small framehouse, a set of farm buildings, a fair line of farm equipment, and a herd of 15 Jersey cows.

At that point their progress was blocked. They needed to make sizable improvements to the barn in order to get on the Grade A milk market. They needed more pasture, more cows, and a larger house. Additional funds plus further improvements in their farming operations would solve their problem but they had gone as far as they could on their own or with conventional credit.

They discussed their situation with the local supervisor for the Farmers' Home Administration. With the supervisor, they worked out a plan to develop and improve their farm through a loan that could be repaid from increased farm income over a period of years.

Included in the loan for $8,400 which was closed in January 1956, were funds for constructing the milking parlor, remodeling and enlarging the house, pasture improvement, and the refinancing of their existing real estate debts.

The farm and home plan upon which the loan is based calls for a balanced farming system of pasture, silage, small grains and hay, and for increasing the herd to 25 head within the next 2 years. Farm records, kept in connection with the loan, show that the present Jersey herd is averaging 7,000 pounds of milk a year. Through improved breeding and other herd management practices, including selective culling, they expect to increase production per cow to at least 8,000 pounds.

Funds for the loan were advanced by the MFA Mutual Insurance Company under the insured farm loan program in which the Farmers' Home Administration guarantees repayment and takes care of all loan-making and servicing activities. The interest on the loan is 3½ percent and there is an additional 1 percent charged for insurance and administrative expenses.

Although the loan was made repayable over a 40-year period, the T. family expects to repay in a shorter time by making larger than scheduled payments whenever they can. The Grade A dairy will add about $1 per hundredweight to the price they receive for their milk.

Mr. T. is a member of the official board of his church, has been a 4–H leader on tractor maintenance and an ASC community committeeman. Mrs. T. is active in community affairs. They are REA members and take an active part in all local agricultural programs.

During 1956 an alltime record of $308,492,000 was loaned or insured by the Farmers' Home Administration throughout the United States. The 1956 total was 5 percent greater than the approximately $293 million loaned in 1955 and also in 1954, and more than 34 percent higher than the total loans made in 1953.

Collections on principal and interest during fiscal 1956, including collections on insured loans, amounted to $282,330,000, an increase over the $257,927,000 in 1955. Loans outstanding as of June 30, 1956, totaled $943,283,000, compared with $896,739,000 as of June 30, 1955. Approximately 55,000 borrowers repaid their loans in full during the year and reached a position where they can obtain the credit they need from other sources.

Operating loans to 78,280 operators of family-type farms, for purchase of farm equipment and livestock and for fertilizer, insecticides, tractor fuel, seed, and other farm and home operating expenses, totaled $147,052,000. These loans helped owners and operators of family-type farms develop balanced systems of farming and make full use of their resources.

Farm ownership loans to buy or develop 5,100 family-type farms totaled $58,765,000, of which $39,765,000 was provided through the insured loan program. Both the total amount loaned and the amount insured reached higher levels than at any time in the past.

Emergency loans helped 45,840 farmers continue normal operations under emergency conditions. These loans totaled $87,044,000, including $13,330,000 for special livestock loans and $25,442,000 for loans made in counties designated for the special Great Plains credit program.

Soil and water conservation loans were advanced to 2,320 farmers for a total of $11,910,000, of which $10,589,000 was insured. These loans are used to develop irrigation and farmstead water systems and to carry out soil conservation practices.

Farm housing loans for the construction and repair of farmhouses and other essential farm buildings were available during part of May and June. Funds were advanced for 560 loans totaling $3,721,000.

Including farmers who already had loans, approximately 242,000 families farmed with Farmers' Home Administration credit during 1956.

With loans to operate, buy, enlarge, or develop farms, and with some types of soil and water conservation loans, the agency's county supervisors in the more than 1,500 county offices assisted borrowers in preparing farm and home plans, keeping farm records, in obtaining advice on farm and home problems, and in analyzing their operations.

Farmers applied for loans at the county offices which serve agricultural areas throughout the United States, Alaska, Hawaii, Puerto Rico, and the Virgin Islands. In each county a committee of three local people, at least two of whom were farmers, determined applicants' eligibility and worked closely with the county supervisor in adapting national policies to local conditions.

Loans were made only to farmers whose credit needs cannot adequately be met by other lenders. Borrowers were required to refinance their loans with other lenders as soon as they were able to do so.

RURAL DEVELOPMENT PROGRAM

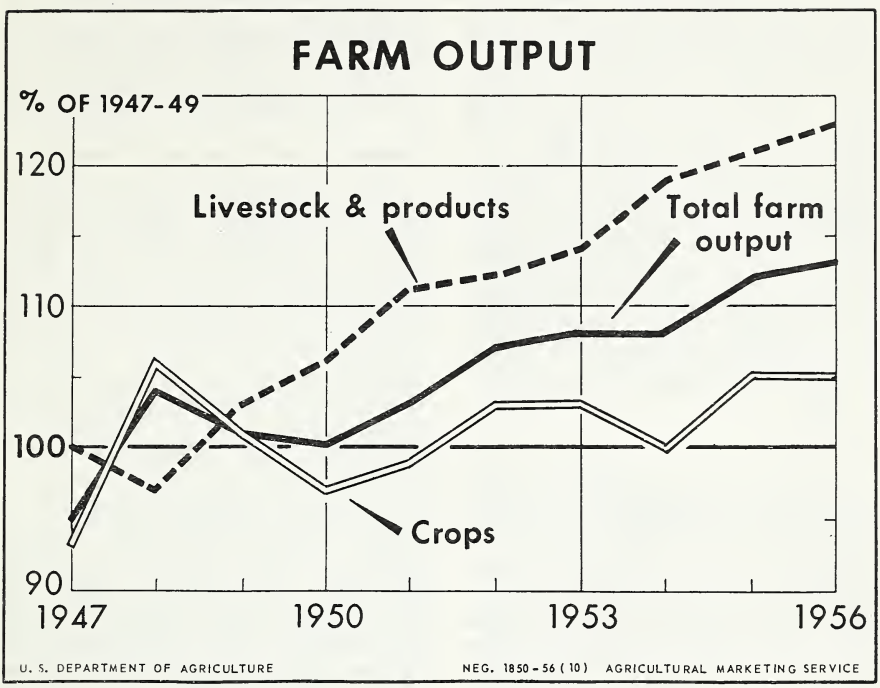
In close cooperation with the Department, more than half the States have begun to move forward with this program. Rural development committees, made up of representatives of agricultural and nonagricultural agencies, were formed in 19 States. Pilot counties where basic farm-town development work is under way were singled out by State leaders in 21 States.

In spite of severely limited Federal-State funds for the program in fiscal 1956, outstanding work has already been accomplished. Many pilot county leaders have inaugurated broad development programs including resource surveys, additional Extension assistance on small farms, business-industry promotion, new vocational education programs, local government changes to permit broader economic improvement.

More Progress Ahead

In fiscal 1957 the Department of Agriculture will provide additional support for State and county leaders giving direction to pilot programs. The program is expected to operate in about 55 pilot counties in 24 States. The sum of $640,000 was appropriated for payment to State extension services for rural development work in the 1957 fiscal year. This will help provide for intensive extension work in selected low-income areas. The Farmers' Home Administration has been granted new authority to make loans to part-time farmers. In addition, the Soil Conservation Service, through increased technical aid in pilot counties, and the Agricultural Research Service and the Agricultural Marketing Service, through broad-scale research on farm problems in disadvantaged areas, will make a direct contribution to the rural development program.

Other agencies of the Department, including the Forest Service and the Rural Electrification Administration, are supporting the program and contributing technical counsel. Through developmental technical assistance to rural areas, and the encouragement of cooperating State agencies, other Federal departments such as the Departments of the Interior; Commerce; Labor; and Health, Education, and Welfare are also playing a vital role in the program.



THE 1956 RECORD AND THE OUTLOOK

The net realized farm income of farm operators was about 4 percent higher in 1956 than in 1955. This gain, the first since 1951, was due mainly to increased marketings, and to new Government programs, including payments under the Soil Bank and the wool program. In 1956, prices of farm products averaged the same as a year earlier; while prices paid by farmers were also up about 2 percent. The parity ratio in 1956 averaged approximately 83, one point less than a year earlier.

Net realized farm income should be a little higher in 1957 than in 1956. While it is always difficult to forecast the amount of change in net income, our best estimate now is a rise of about 5 percent. We expect a further slight increase in the average level of farm-product prices. But we also expect another rise, again small, in prices paid by farmers, and some increase in marketing costs.

Supply

Continued large supplies were a major cause of the drop in farm income from 1951 through 1955. The slight improvement in income in 1956 occurred in spite of continued high output and high carryovers.

Farm output again reached a record high in 1956. So did marketings of farm products. So did the carryover stocks of major farm products. Heavy exports and production adjustments will probably reduce carryovers of cotton, wheat, and rice in 1956–57 crop year. But corn stocks are expected to increase further.

We may reach the turning point in agricultural supplies in the 1957–58 crop year, assuming a large and

successful Soil Bank. Thus, we may make a start in 1957 toward bringing supply into better balance with demand. It is important that these adjustments be prompt and adequate. Crop yields per acre have risen by about 1½ percent a year so far in the 1950's. This is equivalent to adding more than 5 million acres a year to our farm plant. There may be a tendency for the less productive acres to go into the Soil Bank. Granting all this, however, we expect some reduction in total agricultural output in 1957.

Demand

Domestic demand has been strong and rising throughout most of the period since 1951. The number of consumers has steadily risen. During 1956, business activity, employment, and consumer incomes have been very high. And consumers have continued to spend about one-fourth of their disposable income for food.

The demand for agricultural exports has been much less steady. Reaching a high point in 1951–52, after the Korean outbreak, the value of our agricultural exports in the following fiscal year dropped about one-third. Helped by Government programs, it then increased gradually in 1953, 1954, and 1955. During 1956, exports rose very substantially, partly due to stronger demand and partly to Government assistance. The value of our exports in calendar year 1956 was about the same as that in 1951, and the quantity was an alltime high. This brighter picture in exports is an important factor in the improving agricultural situation.

Looking ahead to 1957, we expect still further improvements in business, in the incomes of domestic consumers, and in the domestic demand for food. Agricultural exports will continue high during the present crop year. But it will be difficult to maintain the present rate of exports for several years. A number of countries are now buying some of our farm products for stockpiling.

Livestock and Livestock Products

The outlook for hogs in 1957 is much improved. This is based largely on the reduction in supply that is already in progress. The 1956 spring pig crop was down 8 percent from the previous year and the fall crop was down 4 percent. Hog slaughter has declined and it will be considerably smaller in 1957 than in 1956, at least in the first 6 to 8 months. Even though the downtrend in production may come to a halt in 1957, hog prices and the income of hog producers will average higher. Cattle production continues stable. Slaughter in 1957 will likely be much the same as in 1956, but lighter weights will reduce beef output. Prices may average a little higher than in 1956.

Milk output in 1957 probably will rise a little from the 1956 record of 127 billion pounds. Price ratios are favorable and the rising trend in annual output per cow (a record high of 6,060 pounds in 1956) probably will continue. If price supports in the 1957–58 season, beginning April 1957, are not much different than this season, dairy income will be higher. Production of poultry and eggs was very large in 1956, and prices were lower. Since production in 1957 is expected to be at least as high as in 1956, no significant improvement in prices is in sight.

Wheat

Our exports of wheat in the marketing year 1956–57 are expected to be substantially more than 400 million bushels, at least 70 million bushels more than last season. This would result in the first significant reduction in our carryover of wheat

since 1952. If about 13 million acres of wheat are placed in the Soil Bank and average yields are realized, a substantial reduction in carryover is in prospect during 1957–58.

Feed

The total feed concentrate supply for the 1956–57 feeding year was estimated in December to be slightly larger than in 1955–56, setting a new record of 200 million tons, 15 percent above the 1950–54 average. The harvested acreage of feed grains in 1956 was 10 percent smaller than in 1955. Production was down 1 percent, but carryover stocks increased 4 million tons. The estimated supply per grain-consuming animal unit also was slightly above the 1955–56 record. With an average rate of feeding per animal, the big supply in 1956 would be sufficient to take care of our total prospective requirements and increase the carryover into 1957–58 by around 15 percent.

With the big carryover of feed grains in prospect for next year, ample feed supplies are likely again in 1957–58, even though there may be some further reduction in feed grain acreage under the Soil Bank. Over the next few years, if the general objectives of the Soil Bank program are realized, reduced acreage and output of feed crops would result in a gradual reduction in these big carryover stocks.

The bumper corn supply for 1956–57, more than 4.5 billion bushels, dominates the feed picture. Although corn acreage dropped to the lowest level in more than 60 years, yield per harvested acre reached a new high. Production in 1956 was the second largest on record. Supplies of each of the other feed grains are smaller than in 1955–56: oats, down 16 percent; barley, 8 percent; and sorghum grain, 20 percent. The combined utilization of these grains in 1956–57 and the carryover at the close of the season are expected to be smaller than in 1955–56.

Cotton

A sharp rise in exports is expected to reduce the cotton carryover during the current season. This would be the first reduction in cotton carryover since 1951. Part of the heavy shipments reflect replenishing of stocks abroad. The Soil Bank should contribute to smaller production and further reductions in stocks in the 1957–58 season.

Fats and Oils

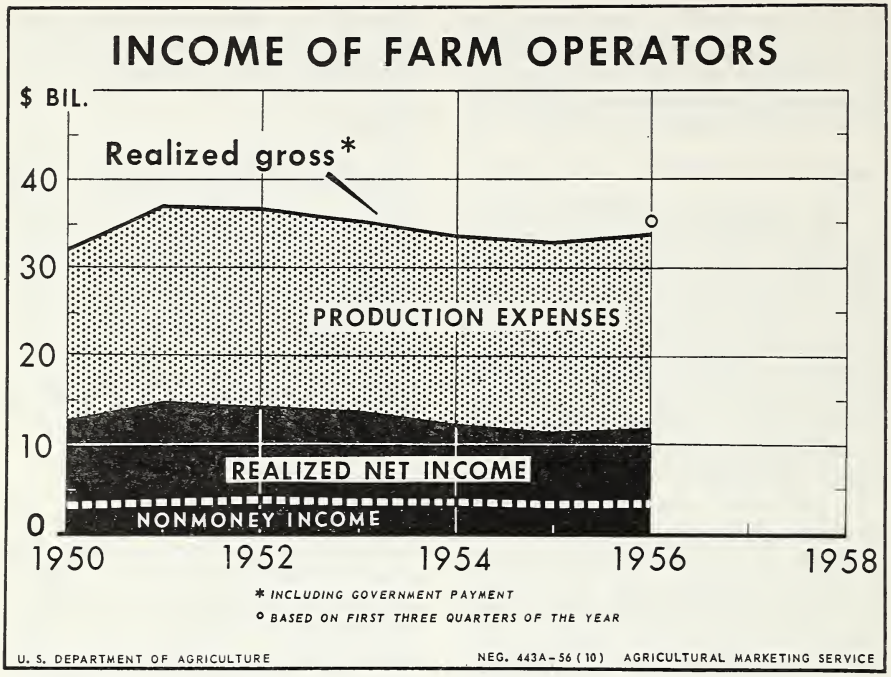
The supply of food fats and oils is about the same for the marketing year that began October 1, 1956, as in the preceding year. Soybean production set another record. Exports of fats and oils in 1956–57 are expected to be close to the 1955–56 record.

Food Consumption

Total domestic utilization of food in 1956 was a record, more than half again larger (53 percent) than in 1935–39.

Civilian consumption of food per person in 1956 was on a par with the record rate reached in 1946. Although only 1 percent larger than in 1955, it exceeded the rate of the immediate pre-World War period by 14 percent and that of the immediate postwar period by 4 percent.

Per person, our people consumed more beef and poultry meat—both chicken and turkey—than ever before. There was a slight increase over the 1955 rate for both milk and butter, a moderate advance for fresh vegetables, and a sharp increase for frozen vegetables. Civilian consumption of "red" meats in 1956 was more than 163 pounds per person, an alltime high.



Price and Income

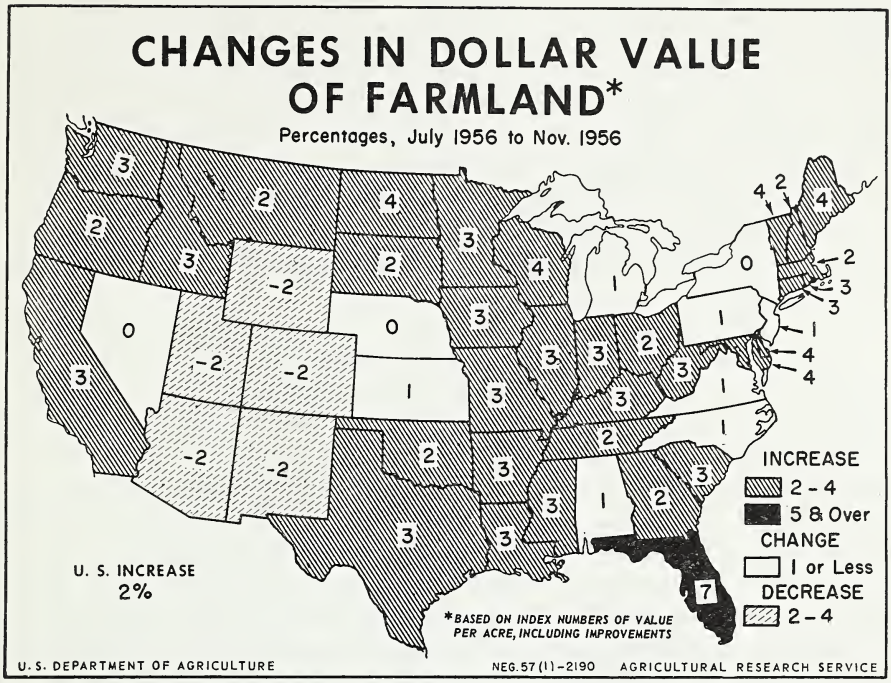
Farmers' realized net income was $11.8 billion in 1956, compared with $11.3 billion for 1955. Cash receipts from farm marketings in 1956 were up 2.5 percent over 1955, owing to an increase in the volume of farm marketings. Farmers' nonmoney income, including the value of home-consumed farm products and the rental value of farm dwellings, was about the same as in 1955. However, the new incentive payments for wool, started in July, and payments for participation in the Soil Bank of 1956, beginning in September, together added about $300 million to farmers' income in 1956.

Farmers' realized gross income, including cash receipts from marketings and Government payments plus nonmoney income, was up about 3 percent. Production expenses have also risen, but only about 2.5 percent. The result was a 4-percent increase in realized net income.

Prices of farm commodities in 1956 averaged 83 percent of parity. Farm real estate values continued to advance in 1956. During the year ended July 1956, the average value of farmland increased 3 percent. From July to November 1956, land values increased another 2 percent. New record highs were established in 29 States as of mid-1956.

The national index advanced to 143 (1947–49=100) as of November 1956.

The volume of farm sales increased for the second year during the 12 months ended March 15, 1956. The rate of voluntary sales was 4 percent higher than in the preceding year. Moderate increases were also reported for foreclosures, tax sales, and sales in settlement of estates, but the number of distress transfers was still low compared



with the number in the 1930's and early 1940's.

Farmers continued to be the most important single group of buyers of farm real estate in the 1955–56 season as they bought nearly 65 percent of all farms sold. A substantial proportion of these were bought to enlarge existing farms.

Agricultural Employment

The total number of persons working on farms, January–November 1956, averaged about 8,056,000, compared with 8,432,000 for the same period in 1955, and 8,786,000 for the 1951–55 average. About 1 person out of 4 so employed was a hired worker, the others being farm operators and unpaid members of farm families. The average hourly wage for farm labor without room and board was 82 cents in October 1956, compared with 77 cents a year earlier.

THE OBJECTIVE FOR AGRICULTURE

Our objective is a prosperous, expanding, and free agriculture—for the benefit of farmers and the entire American people.

We seek a constantly improving abundant life for farm people fairly related to that of other groups of our population.

But prosperity for farm people requires an expanding agriculture.

Nobody, of course, can predict with mathematical accuracy how much food will be needed in the future here at home, or what world demand will be. But certain facts are evident: Farming efficiency is on the increase,

and farming efficiency means abundance. Abundance going to waste does nobody any good. Therefore, we and the other free nations of the world must use all available measures to better our resources, to push ahead with research and other advances, and to market what we produce. Future farm programs should be based on abundant production, rather than on scarcity. The economy of the future will be an economy of abundance. It will not be static. Our agriculture must be dynamic to keep up.

An expanding and prosperous agriculture in turn must be based on freedom—freedom for the individual to make his own decisions, to manage his own affairs.

We are a prosperous people today because of a free enterprise founded on spiritual, not material, values. Free enterprise is based on freedom of choice—free agency—an eternal God-Given principle. The Founding Fathers, inspired though they were, did not invent the priceless blessing of individual freedom and respect for the dignity of man. No, that priceless gift to mankind sprang from the God of Heaven and not from Government. The Founding Fathers welded together the safeguards as best they could, but freedom must be continually won to be retained.

Some say our free enterprise is inefficient and wasteful. But let them show us another system that has contributed equally to the free progress of mankind. Our free-enterprise system is not perfect; it is operated by human beings who have their full quota of imperfections. But this system, founded on inalienable rights—eternal principles—has given the American farmer, and the Nation as a whole, more of the material good things of life than any other system this world knows anything about.

More than 90 percent of our families own property in the form of real estate, industrial stock, and liquid and other assets. Here in America we have the world's highest level of material living—and it is the product of free enterprise. There is always the danger that, as nations enjoy higher standards of living, they may become more interested in preserving their comforts and luxuries than in preserving the ideals and principles that made them great. This must never happen to our agriculture or to our Nation.

We, here in America, as Theodore Roosevelt said a half century ago, "hold in our hands the hope of the world, the fate of the coming years; and shame and disgrace will be ours if in our eyes the light of high resolve is dimmed, if we trail in the dust the golden hopes of men."

With God's help, we shall go on building a prosperous, expanding, and free agriculture in a prosperous, expanding, and free America.

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